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THE ORCHID REVIEW

Founded in 1893 by R. A. ROLFE, A.L.S.

Edited by GURNEY WILSON, F.L.S.

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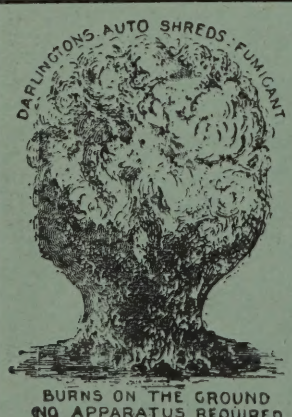

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AMERICAN ORCHID SOCIETY EXHIBITION

At Horticultural Hall, Boston, Mass., U.S.A.,

MAY 8th to 11th, 1924.

THE

ORCHID REVIEW

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An Illustrated Monthly Journal

OF ORCHIDOLOGY

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THE ORCHID REVIEW.

VOL. XXXII.] JANUARY, 1924. [No. 367.

NOTES.

MR. JAMES O'BRIEN.—In recognition of the valuable services given by Mr. James O'Brien, V.M.H., as secretary of the Royal Horticultural Society's Orchid Committee since its establishment in March, 1889, the members of the Committee will present him with a testimony of their appreciation on the occasion of his retirement during the present month. In response to the Chairman's invitation to subscribe, a sum of over £100 has already been received.

MAGNIFICENT CYPRIPEDIUMS.—Truly remarkable results have been obtained in the collection of G. F. Moore, Esq., Chardwar, Bourton-on-the-Water, Glos., where Cypripediums are specialized in, and cultivated with more than ordinary success by his able gardener, Mr. W. H. Page. At the R.H.S. meeting on Nov. 27th, this well-known amateur received no less than four First-class Certificates for Cypripediums, surely a record for one day, while on the following meeting he succeeded in obtaining three more, as well as the special congratulations of the Orchid Committee. Mr. Moore's grand group of Cypripediums staged at the R.H.S. meeting of December 11th will long be remembered as one of the finest exhibits of these popular plants, and it thoroughly deserved the Silver-gilt Lindley Medal awarded. No less than 80 specimens were included, and the fact that every one had been raised from seed and cultivated in this amateur's collection makes the achievement all the more praiseworthy. Many of the plants represented the fifth generation of Cypripediums raised in the Chardwar collection.

CŒLOGYNE ASSAMICA.—Two pretty specimens of this species were flowering freely last November with Messrs. J. & A. McBean. It was originally described in 1857 (Linden and Reich. f. in *Berl. Allg. Gartenz.*, 1857, p. 403). Soon afterwards it was figured by Reichenbach (*Xen. Orch.*, ii. p. 111). In the strongly three-lobed lip it is most like C. brunnea, but the flowers are smaller, and with lighter sepals and petals.

CORRESPONDENCE.

R.H.S. ORCHID CLASSES FOR SMALL GROWERS.—A short time ago I had great pleasure in visiting the Royal Horticultural Society's Show at Westminister, where I saw the fine exhibits of the big amateur Orchid enthusiasts out for one anothers' blood. As a small grower of Orchids, with one Orchid house and an occasional gardener, I always fail to see that the R.H.S. ever endeavours to put up a class for such a one. Surely there are hundreds of such growers, with their three to five hundred plants, many of whom would greatly enjoy competing with one another. May I ask your support in getting, say, a class for us at some show towards the end of November each year, exhibits not to exceed twelve Cypripediums, open to any amateur not employing more than one man or boy. I would suggest this proposition should have the trade growers' support, for it must give added zest to we small gardeners. Thanking you for any help you may give us.—L. W. DIXON, " Pitlochrie," St. Albans.

A PAGE FOR BEGINNERS.—The *Orchid Review* is beautifully got up, but I think rather advanced for a beginner. If a page or so could be reserved for explaining the different genera, species, and hybrids, as they come in season, it would be greatly appreciated. For instance, one sees a catalogue with numerous names, and wonders what these plants are like. Many of us are unable to pay frequent visits to nurseries in order to see the various Orchids. Once we find we can manage a few cheap kinds, then we want something better.—CHAS. E. COBLEY, Stroud, Glos.

R.H.S. SHOWS.—What a pity it is that there are so few of the small amateurs to be seen exhibiting at the R.H.S. Shows. The recent Bristol Show, was an entirely different event, for there some real competition could be witnessed amongst several of the smaller amateurs. If such can happen at Bristol, why is it not taking place at Vincent Square, Westminister? Is the R.H.S. getting too large to attend to the wants of the rising generation? A little more encouragement would certainly be appreciated.—AMATEUR.

NOTES FOR AMATEURS.—Our Mexican Lælias are succeeding very well, especially L. Gouldiana, which has yielded several spikes, some with five flowers. Of Lælia anceps we have the varieties Bull's alba, part of the original plant, Schrœderæ, Hilliana, and various others, all of which have done well. We flower the named varieties far better than the typical anceps. Our faithful friends the Cymbidiums are doing their duty splendidly. Of the two big plants of Tracyanum, one has four spikes and the other three. Anyone with an ordinary greenhouse will find Cypripediums and Cymbidiums of easy cultivation, and suitable for places without any great heat or trouble.—J. R. WALKER, Leeds.

THE AMERICAN ORCHID SOCIETY.

THE American Orchid Society has decided to hold a Grand Exhibition of Orchids at Horticultural Hall, Boston, on May 8th to 11th, 1924. The Massachusetts Horticultural Society, founded in 1829, and the most important of its kind in America, has not only promised to lend its large building, with all the necessary heating and janitor service, for the event, but is co-operating with the Orchid Society to make this exhibition as attractive as possible to both exhibitors and visitors. It has been decided that it will be to the best interests of Orchid growing in the United States to allow free admission, so that the beautiful nature of these plants may be seen by all who wish to.

Although the American Orchid Society is young, having been organised in 1921, it is vigorous, courageous, and efficient. Its membership comprises nearly all the growers of the United States, and it is truly representative of Orchid culture in that country. This forthcoming event will be the first truly national exhibition of Orchids in the United States, and the American Society is determined to make it a success. It may be stated with confidence that this event will be influential in increasing the knowledge, appreciation, and culture of Orchids in the States.

A preliminary schedule has been issued, detailing 67 classes. Amateurs and commercial growers are well provided for, as also are those who take an interest in the hardy native Orchids. The Massachusetts Horticultural Society offers a special prize for the most original and effective exhibit, illustrating the manner in which epiphytal Orchids grow upon trees, while another prize is offered for the most original arrangement of Orchids in flower. Numerous Gold and Silver Medals, as well as Silver Plate and Cups, are also offered in the various classes.

The Officers of the American Orchid Society are: President, Mr. Albert C. Burrage; Vice-Presidents: Messrs. T. H. Wickshire, W. A. Manda, Oakes Ames; Treasurer, Mr. Louis Burk; Secretary, Mr. Alfred J. Loveless; Trustees, Messrs. Loren D. Towle, George E. Baldwin, John E. Lager, Joseph Manda, Edward Roehrs, Thomas Roland, Edwin S. Webster, Oliver Lines and F. E. Dixon. The Schedule Committee consists of Messrs. Thomas Roland, George E. Baldwin, James Goodier, Alfred J. Loveless and Joseph Manda.

We learn that the Society is already assured of a truly representative lot of entries, and also that the judges chosen to act will be well-known, impartial and independent experts of high character.

R.H.S. MEETINGS.—The next meetings of the Royal Horticultural Society will be held on January 15th, 29th, and February 12th, 26th.

AUSTRALIAN ORCHID CLUB.

FOR a long time past a number of Orchid enthusiasts in Australia have felt the necessity for a regular exchange of ideas in regard to the cultivation of their favourite flowers. Now they have the satisfaction of being members of the Victorian Orchid Club, which, it is believed, is the first society formed in Australia for the study and the promotion of the growing of Orchids. The membership is about 50, and increasing steadily.

The following officers have been elected:—President: E. P. Johnson, Esq., Caulfield; Vice-president: E. E. Pescott, Esq., Dept. of Agriculture, Melbourne; Treasurer: J. B. Cameron, Esq., 430 Bourke Street, Melbourne; Secretary: D. J. W. Chandler, Esq., Tooronga Road, East Malvern.

The first general meeting was held in June, 1923, when Mr. Basil Hodgins, of Victoria Nurseries, Essenden, gave a talk on Cypripedium culture. This cultivator has given up the use of sphagnum moss as a potting medium, as he finds that it quickly becomes sour. Instead of it, he uses the common bush moss, with tree-fern cut up into pieces an inch square, and a few crocks and pieces of charcoal. The pots are crocked to about one-third of their depth. Neither loam nor leaf mould is used in potting. It is claimed that this potting mixture induces full root growth, does not become sour, and moreover will withstand neglect. Loam is used when the Cypripediums are grown in excessive heat. The plants are fed weekly with liquid cow manure during the period of September to December with frequent waterings. In winter, they are watered once a week. Mr. Hodgins believes that the easiest way to kill Cypripediums is to overpot them; his are kept in small pots and are always allowed to become root-bound. Should re-potting be required, it is only done when root action recommences, after the flowering season, from August to October.

Mr. Hodgins exhibited a fine example of Cypripedium Dreadnought with two large flowers; Mr. T. Jones, of Bendigo, sent a dozen Cypripediums from his large collection; and the President exhibited a three-flowered spike of Brassocattleya Lisette from a plant that had been imported about eight months previously.

The officers of the club will be delighted to hear from any amateurs and nurserymen interested in Orchid culture, especially from those in other Australian States, and they will also be pleased to meet them when visiting Melbourne in order that some of the local collections may be inspected.

VANDA ROXBURGHII.—This is the species upon which the genus was founded and the first Vanda that was introduced into British gardens. It was cultivated by Sir Joseph Banks in the early part of the nineteenth century and flowered for the first time in 1819.

CYPRIPEDIUM CALLOSUM SANDERÆ.

WHEN Cypripediums were being imported in thousands, as they were before the days when hybrids first became popular, frequent opportunities occurred for discovering distinct varieties. The first appearance of a flower spike on a newly imported plant was watched with

CYPRIPEDIUM CALLOSUM SANDERÆ.

keen interest, for if it showed any marked difference from the general type there was every likelihood that something distinct would be realised when the flower itself opened. The typical C. callosum was discovered by M. Regnier in Siam, about the year 1885, and described in 1886. In a little book called "Collection of Cypripediums," 1899, Mr. R. H. Measures

enumerates nine varieties and two natural hybrids of C. callosum as being in his collection at Streatham; C. callosum Sanderæ is included and Messrs. Sanders' name given as the introducer.

At the Temple Show of 1894, one of the chief attractions was Messrs. Sanders' exhibit of C. callosum Sanderæ, to which a First-class Certificate was awarded. All the typical suffusion and dark crimson markings had disappeared, their place being taken by a white ground with apple-green lines and tinting. Our illustration is of a specimen plant flowering in the collection of Lieut-Col. Sir George Holford, Westonbirt, Glos., where, along with many other members of the genus, it is cultivated to a fine state of perfection by Mr. H. G. Alexander. C. callosum Sanderæ is one of the parents of the beautiful C. Maudiæ figured on page 301 of our October issue.

NEW OR NOTEWORTHY ORCHIDS.

PART No. 6 of Schedulæ Orchidianæ is devoted to New or Noteworthy Orchids, by Prof. Oakes Ames, of Boston, Mass., U.S.A. In this paper Orchids from the Philippine Islands and from North and Central America receive attention. Among them are many that the author has been unable to refer to species heretofore described. Altogether, some 57 new species are now described, the genus Pleurothallis being represented by ten, Stelis, Malaxis and Bulbophyllum, each with five, while Acoridium and Epidendrum each have four.

Epidendrum exasperatum is described as a remarkable species, characterised by lateral and terminal racemes, and usually represented in herbaria by specimens that fail to give an idea of the plant as it occurs under natural and favourable conditions. Specimens received from Mr. C. H. Lankester were accompanied by the following note: "One of the commonest species at moist, high elevations, on nearly every fence post. In favourable situations the plant attains heroic dimensions, with a central stem up to ten feet in height, and three quarters of an inch in diameter, possibly much branched." Mr. Oakes Ames remarks that specimens prepared for the herbarium rarely exceed three or four decimeters in height, and it is such species as E. exasperatum which indicate the necessity for full field notes.

The specific name of the new Bulbophyllum colubrimodum alludes to the peculiar apical portion of the labellum which, in certain positions, resembles the head of a snake about to strike. Fifteen of the new species described are clearly delineated in a dozen full-page plates that increase the value of this publication. The figure of Isotria verticillata represents a two-flowered specimen in which fasciation has taken place.

GIFT OF ORCHIDS TO KEW.

BY the will of the late Hon. N. C. Rothschild, the Royal Botanic Gardens, Kew, will receive such of his collections of Orchids at Ashton Wold as were collected in New Guinea by Dr. A. F. R. Wollaston, or as represent Orchids so collected, and also any other specimens of his Orchids as may be desired as being of botanical, though not necessarily horticultural, interest.

The Wollaston Expedition to Dutch New Guinea had for its object the exploration, as far as possible, of the geography of the Nassau range drained by the Utakwa River, and to collect animals and plants, as well as to study the ethnology of the natives. A landing was made on the Utakwa River on September 18th, 1912, and the expedition left the country on April 3rd, 1913. The transport work was carried out by 74 Dyaks from Borneo, whilst five collectors, natives of Sarawak, were employed in collecting botanical specimens. The party was accompanied by an escort provided by the Netherlands East Indian Government, and numbered in all 226 persons.

A full Report of the Botany of this expedition was compiled by Mr. Henry N. Ridley, and others, and published by the Linnean Society (*Trans. ix. pt. i.*), It is stated that "Another somewhat striking phenomenon is the immense number of Epidendreæ among Orchids and the scantiness of the Vandeæ ; the species of Dendrobium and Bulbophyllum in New Guinea seem endless." And regarding the flora generally, "it would appear advisable to consider New Guinea with a few of the most adjacent islands as forming a distinct region of its own, with a large endemic flora, mixed with derivatives from Malaya, Australia, and Polynesia, and, possibly through the Philippines, from the temperate regions of the north."

The living plants brought home by Mr. Wollaston, and flowered by the Hon. Charles Rothschild included Dendrobium Wollastonii, described as a handsome plant differing from D. Forbesii, Ridl., in its hairy sepals and mauve colouring; and Eria Wollastonii. Three plants fairly well known were collected in Cœlogyne asperata, C. Veitchii, and Phaius Blumei. O. Spathoglottis Viellardii, Mr. Ridley states that "I cannot distinguish the plants quoted above from the species originally described by Reichenbach from the Isle of Pines, and believe that it is widely distributed over the far Eastern Archipelago. Like the common S. plicata, Blume, it varies in non-essential parts to some extent, but I see nothing to warrant making many species out of it." Upwards of 160 distinct Orchid species were collected by this expedition, Dendrobiums being numerous and Bulbophyllums well represented. Cypripedium papuanum was the only representative of the genus.

CHYSIS HYBRIDS.

THE genus Chysis does not give many opportunities for making hybrids, for not only are the species limited in number, but they cannot be included as being among the popular plants of present times. Chysis aurea does not make a good seed parent, for self-fertilisation generally occurs before the flowers expand. Three hybrids have been recorded, and all of them result from the work carried on in the past by Messrs. Veitch.

C. Chelsoni is believed to be the result of crossing bractescens with lævis. The original parentage was given as Limminghei × bractescens, but Reichenbach suggested that lævis was the second parent, and this was followed by Rolfe, who adopted Limminghei × lævis. Messrs Veitch, in their Orchid Manual, state it to be bractescens × lævis. The sepals and petals are pale tawny-yellow at the base and with a large reddish-fawn blotch at the apex; basal half of the lip coloured like the basal parts of the other segments; apical half yellow spotted with red, the raised lines white spotted with purple. It first flowered in 1874.

C. Sedeni was raised by crossing Limminghei with bractescens, the first flowers being seen in 1880. The sepals are white, the petals similar, but with a large light rose-purple blotch near the apex; side lobes of lid sulphur-yellow, with some purple streaks at the base on the inner side; middle lobe amethyst-purple streaked with white.

C. langleyensis was originally recorded as being a hybrid between bractescens and Sedeni, but the latter parent was subsequently amended by the raisers to Chelsoni. It first appeared in 1896, the flowers being attractive and showing a preponderance of the bractescens characters.

THE ORCHID CLUB.—The objects of "The Orchid Club" include the promotion of good fellowship, and the advancement of all that pertains to the natural history, the cultivation, and the hybridisation of Orchids. The categories of awards will be: (1) Premier Diploma; (2) Diploma of Merit; (3) Certificate of Cultural Commendation; (4) Certificate of Commendation for instructional exhibits and demonstrations. A special certificate or medal may be added to any of these awards to signify some exceptional and new feature, but only by the unanimous vote of the Committee, and the reason for such addition will be entered in the records of the awards. Prizes will also be awarded for research on Orchids, in such form, and on such occasions as the Committee may determine, and for this purpose the Club has power to create a special fund. Amateurs within the British Isles are eligible for ordinary membership. The annual subscription will be two guineas for members residing within a 30-mile radius of Manchester, and one guinea for those residing without that radius.

THE ORCHIDS OF BOLIVIA.

THE fifth part of *Die Orchideenfloren der sudamerikanischen Kordillerenstaaten* deals with Bolivia. Like the previous parts, it is the work of Dr. Rud. Schlechter, who has devoted much time to a close study and enumeration of South American Orchids.

The first botanical collectors to explore Bolivia were French: Alcide D'Orbigny, 1830-1835, and Joseph de Jussieu in 1835. With few exceptions, it was not until 1861 that specimens of Orchids were brought to Europe. In that year Gustave Mandon brought home 1,800 botanical specimens, among them being many Orchids which were subsequently described by Reichenbach, fil. (*Xenia Orch.* III. p. 17-27). Little more was added to the flora of this very inaccessible country until an American, H. H. Rusby, visited La Paz in 1885. His collections were described in the following year, in the Bulletin of the Torrey Botanical Club. Influenced by him, Miguel Bang, a resident of La Paz, made important herbarium collections which during the period 1889-1893, found their way into the United States. The late R. A. Rolfe published descriptions of these collections, which included many new speices.

In 1892 Otto Kuntze travelled through parts of Bolivia. The Orchids which he found were examined by A. Cogniaux, four out of twenty-one being described as new species in the third volume of Kuntze's *Revisio*. In 1901-1902, Bolivia was visited by R. S. Williams, an American, whose collections were important, consisting of 1,600 species, including many Orchids. It is to be hoped that particulars of these may be published. In 1903-1904, K. Fiebrig, on behalf of the Berlin Herbarium, entered South Bolivia from Paraguay. His collections include many interesting Orchids which have been described by Kränzlin and Dr. Schlechter.

By far the largest herbarium of the Bolivian flora has been made by Dr. Otto Buchtien, Director of the Museo Nacional in La Plaz. From the material collected by him a very complete knowledge of the flora of this country can be obtained. Dr. Schlechter examined the Orchids that were among the first 2,000 specimens, and published descriptions of many novelties (*Fedde, Rep.* XII, 1911). In the history of the botanical research of Bolivia, the name of Dr. O. Buchtien must stand pre-eminent. Beside him stands Dr. Herzog, who has travelled far and wide in this interesting land, and whose published works thereon contain much information. Dr. Schlechter has had the opportunity of working up his collections of Orchids, and of 70 species no less than 30 have proved to be new.

Although Dr. Schlechter states that Bolivia, unlike other South American States, has not been visited by collectors sent by Orchid importing firms, this is not quite correct, for the late Louis Forget travelled

there for the firm of Messrs. Sanders, and among other plants, found the beautiful Selenipedium Sanderæ, which is probably again lost to cultivation.

It appears that Bolivia contains a very large number of interesting and beautiful Orchids, and that many handsome novelties will reward the collector. A large area of the country, especially the parts bordering on Brazil, is, as yet, botanically unexplored. The north-western territories are more promising than the drier south-western region. Dr. Schlechter states that although among the Orchids hitherto described there may be a paucity of species to which little horticultural value is attached, he thinks that the country must contain many that would be worth importing, especially Cyrtopodiums, Catasetums, Masdevallias, Epidendrums, Oncidiums and Odontoglossums.

An interesting table showing the distribution of the 323 species so far known is given, and of this number 218 are endemic. Section II of this publication is devoted to descriptions of new species, and section III deals with the enumeration of genera and species, thus comprising a most complete and valuable record of the Orchids of Bolivia.

SANDERS' ORCHID HYBRID LIST.—The first permanent, triennial Supplement to Messrs. Sanders' Hybrid List is now in the press and will shortly be ready for issue. This addenda of 48 pages enumerates over one thousand hybrids that have been recorded during the years 1921, 1922 and 1923. It includes all the hybrids published in the temporary addenda issued with the main volume in 1921. Price 7s. 6d., post free.

R.H.S. GARDENERS' DIARY.—The appearance of this pocket diary for 1924 marks its thirteenth successive year of publication. Horticulturists will find an immense amount of valuable information in the first seventy pages, following which is the diary proper with weekly notes of the principal work to be done. Of the R.H.S. meetings for 1924, we note that March 11th and 12th is for special exhibits of Cymbidiums, and April 8th and 9th for Odontoglossums. Chelsea Show will take place on May 27th, 28th and 29th, the Holland Park Show on September 23rd, 24th and 25th, and the Fruit and Vegetable Show will be held in the Society's Hall, Westminster, on October 7th and 8th. A regrettable matter is the omission of any reference to the Orchid Exhibition held annually about the end of October.

CYPRIPEDIUM CILIOLARE.—This plant was introduced from the Philippines, in 1882, by Messrs. Low & Co. It is allied to C. superbiens, but may be distinguished by its shorter and differently coloured dorsal sepal. The specific name is in reference to the numerous marginal hairs of the petals.

ORCHIDS AT COOKSBRIDGE, SUSSEX.

THE late Mr. James McBean commenced horticultural business at Cooksbridge as far back as 1880, and devoted his attention to the cultivation of Adiantum cuneatum, Chrysanthemums, etc.; in fact, he built the nursery especially for the cultivation of the former. A few years later his admiration for the Orchid, in particular the Odontoglossum and allied genera, induced him to purchase a few plants at various sales. These were placed near the roof in one of the fern houses, and from the first they were manifestly at home, the atmospheric conditions being very similar to those existing in Colombia, were O. crispum grows naturally. Mr. McBean soon procured a further batch of 400 imported plants of O. crispum, and his success in the new venture, from a cultural point of view, caused him to initiate his youngest son Albert into this line, promising him more plants and houses when required. The late head of the firm was a most determined cultivator of any plant that came within his scope, and the success enjoyed at the present time by the son is attributed entirely to following the cultural methods that he instigated.

To-day the nursery is entirely devoted to Orchids. Its extent may be judged by the three large Odontoglossum houses, each measuring 100 by 18 feet; the Cymbidium house of 75 by 25 feet; and the eight long Cattleya houses, varying in width up to 25 feet. There are also other houses devoted to young seedlings of various kinds. A special feature of the establishment is the large number of plants that have been certified by the Royal Horticultural Society and also by the Manchester Orchid Society.

On entering the first of the large Odontoglossum houses, one's attention is attracted by the many fine specimens of various Oncidiums arranged along the central staging; they include the handsome macranthum, with its variety hastiferum, the pretty Leopoldii, and the pleasing hybrid known as McBeanianum (macranthum × superbiens). Crosses between the genera Odontoglossum and Oncidium are not yet as numerous as in some other bigenerics, but here may be seen Odontocidium Edwardatum (Od. Edwardii × On. serratum), with long flower spikes, O. Nanetto (Od. Harryanum × On. incurvum), a strong grower, and O. Juno (Od. ramosissimum × On. tigrinum), the latter producing spikes of decorative habit and bearing white flowers prettily spotted with rose-pink. Of the several plants that have been raised from this seed-pod not a single example has produced flowers inheriting the yellow colour of the tigrinum parent. Adaglossum Juno, produced by crossing Ada aurantiaca with Odontoglossum Edwardii, and A. nanum (A. aurantiaca × O. Phœbe) are a pair of interesting hybrids.

The numerous Odontoglossum hybrids form one of the leading attractions

of this establishment. It is difficult to convey a true idea of their wonderful vigour and the manner in which new growths are pushed forth from several bulbs simultaneously, an occurrence that takes place without the rhizome being severed. A plant of Od. Theseus bore a spike five feet in height and with 13 lateral branches. As a contrast to this, mention may be made of several hybrids of Od. Rossii, which, although somewhat difficult to cultivate, possess a compact habit of growth. Od. Desdemona II. (Rossii × illustrissimum) has reddish spotting on a deep-rose ground, while in Od. Antiope (Edwardii × Rossii) the spikes are more extended and bear flowers of richer coloration.

Of the many Odontoglossums that have received high awards, probably the best is Diamond var. Perfection, figured in the *Orchid Review*, vol. xxx., page 47. Another remarkable hybrid exists in O. Vega, of solid crimson-red colour, except for a narrow white edge to all the segments; it received a First-class Certificate, R.H.S., December 14th, 1922. Od. Beulah is justly considered one of the finest on account of its grand shape and colour. Od. St. George var. Pluto bears broad petalled flowers of rich colour. There is also a plant of O. Wendlandianum, a rare natural hybrid. Among the species are vigorous examples of O. hastilabium, nebulosum, citrosmum, Harryanum, and Rossii.

At the end of one of the other large houses is an unusually fine plant of O. coronarium, with several leading growths, and which is successfully cultivated on a broad teak-wood raft. Varieties of O. crispum have always received special attention in this establishment. Among the noteworthy examples are several that have been raised in this country from the beautiful crispum Doinii, a plant that has proved itself one of the finest parents. The offspring include the elegant crispum Challenger, figured in our issue for April, 1922, as well as the varieties Daphne, Priscilla, and Pearl McBean. On other sections of the staging are large batches of O. crispum xanthotes and eximium xanthotes. O. eximium, McBean's variety, is still one of the best of its kind, and last season produced a grand spike of 13 flowers. Another variety of eximium worthy of special mention is La Papillon, figured in vol. xxvi., p. 233.

Odontiodas are mostly cultivated on the side stages, and nearly all the popular kinds are to be seen in large batches. There are, however, two very remarkable varieties of outstanding merit, for each has received a First-class Certificate from the Royal Horticultural Society and a Gold Medal from the Manchester Orchid Society: the first is Oda. Joceyi var. splendens and the second is Oda. Hypatia, McBean's var. Oda. Enchantress comprises several beautiful varieties, and spikes with from 15 to 20 flowers are of common occurrence. In Oda. Madeline a pretty effect is produced by the segments being bordered with deep rose, while the central area is

filled with reddish spotting. Among the Odontonias are some charming xanthotic varieties of Ota. Magali Sander, the yellow spotting standing out clearly. Last November an attractive feature was Cochlioda vulcanica carrying a spike with eleven branches, all bearing many rose coloured flowers, and forming further proof that Orchids with small flowers are exceedingly pretty when well cultivated. Other elegant species here grown to great perfection are Maxillaria grandiflora, M. nigrescens and Pilumna nobilis, the latter also known in gardens as Trichopilia fragrans nobilis.

The largest of the two houses devoted to Cymbidiums of flowering size measures 70 by 25 feet. On the central staging are many grand specimens of the new hybrids for which this firm has become famous. C. Lowianum is a species too well known for description, but when seen in the fine varieties here grown its flowers are distinctly handsome. The variety concolor is distinguished by the V-shaped blotch on the lip being nearly eliminated. C. Devonianum is rather a difficult subject to cultivate, but it well rewards the successful grower by producing an attractive pendulous spike of flowers. The introduction in quantity of C. insigne led to the making of a beautiful series of hybrids. Probably the most popular is C. Alexanderi (eburneo-Lowianum × insigne), for the three species contained in its parentage have led to the production of flowers varying from white to yellow and light blush to deep rose. C. Alexanderi album is certainly the rarest and most prized of the many varieties, and Messrs. McBean are ortunate in having a strong plant with three robust flower spikes. Other notable varieties of this hybrid are Ida. Prince Imperial and solum. C. Vesta, also very promising, was obtained by crossing Alexanderi with insigne. C. Doris (insigne × Tracyanum) is generally the first of the insigne hybrids to come into flower, the spikes being at their best during Christmas and the New Year. C. Auriga (Alexanderi × Excelsior) has yielded several distinct varieties in which yellow is the outstanding colour. C. Castor is also well represented. As evidence of the work being put into the production of Cymbidium hybrids, it may be stated that several thousands of small seedlings have recently been potted separately.

In the largest of the Cattleya houses the central staging is divided by a raised footway. During recent years Mr. McBean has devoted his attention to the production of large plants with several leads, and in this matter he has certainly been successful. Several of the most popular of Cattleyas already exist in specimens having as many as four and five leading growths, and it is these plants that are much in demand for show purposes. They include choice varieties of C. Enid alba, white, with bright purple mottling on the lip, C. H. S. Leon (Schrœderæ × Warscewiczii), C. Bellona (aurea × Maggie Raphael alba), which produces several delightful flowers on the spike, and C. Fabiata, with many flowered spikes. C. Falco yields blooms

of rich colour, as also does McBean's strain of C. Fabia. A hybrid of handsome appearance is to be seen in C. Hassallii alba, white, except for a purple area on the lip. C. Caroline, produced by crossing Enid with Percivaliana, is considered the finest of all the Percivaliana hybrids, the labellum being unusually well coloured. C. Eleanore is another of the attractive hybrids with white sepals and petals and a purple labellum.

Some plants of C. Dowiana have been flowered annually for the last eleven years, and others of C. aurea for the long period of 20 years. An interesting batch of plants has been raised by crossing Dowiana with aurea; they possess a more robust constitution, the flowers are larger, and the labellum is of richer coloration. C. Mendelii var. Olympic is the best of the many fine varieties of this species here grown. C. Cowaniæ has proved itself one of the finest of the white flowering hybrids. C. Warscewiczii flowers freely in this sunny locality, and several grand varieties are cultivated. In November last, a hitherto unflowered plant of this species came into bloom and proved to be a distinct variety, the white flower having a slate-blue mottling on the labellum; it has been named Fairy Queen. At the end of this house are some strong plants of Epicattleya Nebo (C. Clæsiana × E. O'Brienianum), which continue to produce small rosy-mauve flowers throughout the entire year. They were originally in the collection of the late Sir Trevor Lawrence, who presented them to Mr. McBean on hearing that their attractive qualities were appreciated.

The collection of Læliocattleyas is very extensive, and elegant flowers are on that account to be seen at all seasons of the year. Lc. Beatrice (C. Schrœderæ × Lc. callistoglossa) is a hybrid that has yielded many beautiful varieties, while Lc. Sybil is to be seen in several superb specimens. Lc. Colmaniana has long been noted for the rich coloration of the labellum, but here is a batch of this hybrid whose flowers are unusually well coloured, due to utilising parents of similar quality. Other Læliocattleyas include the pretty Eunice, produced by crossing C. chocoensis with L. anceps, and yielding tall spikes of flowers; Misiones, with flowers of rose-salmon colour; Schrœderæ, of remarkable vigour, and bearing large flowers; as well as Primrose, obtained by crossing Lc. Trimyra with C. Schrœderæ, the flowers being orange-yellow in colour.

In Lc. Linda there exists a most useful hybrid, for the variation is so great that flowers of light blush, yellow, salmon, bronze, violet-purple, and purple have all been produced on different plants. The latest addition is to be seen in Lc. Profusion (C. Hardyana × Lc. Serbia), which has exceeded all expectations as regards formation and colour of the flowers. This hybrid is the most pleasing of the many that have originated in this establishment. Lc. Fascinator (L. purpurata × C. Schrœderæ) has been a popular spring-flowering hybrid for many years, and is well represented

here. Messrs. McBean have crossed it respectively with Mendelii, Mossiæ and Warscewiczii, and the resulting hybrids all flower in the spring and early summer, a period when such plants are much in demand for show purposes. Almost needless to remark, there are thousands of young Cattleyas that have been raised from the choicest parents.

Brassocattleyas are also numerously represented by specimen plants. Special mention may be made of Digbyano-Mossiæ var. Queen Alexandra, with white flowers, Apollo, British Queen, Ilene and Springtide. Bc. Bianca is regarded as one of the best yet raised, the flowers being noted for their large size and the attractive ochre-yellow colour on the disc of the labellum. Brassolæliocattleyas include such fine crosses as Cissie, Jupiter, Muriel, and Amber, the latter being appreciated on account of its yellow colour. Hybrids of Sophronitis grandiflora are another feature of this place, and among the many worthy of recording are Slc. Meuse, F.C.C., R.H.S., Slc. His Majesty, Edgemoor var. and Slc. Edna var. Mrs. Hanmer, the two last mentioned having received First-class Certificates from the Manchester Orchid Society in 1921. All the above-mentioned sections are represented by many thousands of seedlings in all stages of growth, from minute specks in the seed pans to plants of flowering size.

In some of the smaller houses are several robust examples of various species, including Vanda Kimballiana, Bletia Shepherdii, of glorious colour, a selection of Cirrhopetalums, the handsome Angræcum superbum, and flowering plants of Cœlogyne assamica. Dendrobiums are again in favour, and among them may be mentioned hybrids of the nobile section, a batch of over three dozen plants of atroviolaceum, and a flowering plant of the very rare Ashworthiæ. Sarcopodium (Dendrobium) acuminatum is represented by several robust plants. Miltonias are to be seen in a varied lot of the vexillaria section, while M. Phalænopsis grows as a garden weed.

Masdevallias occupy considerable space on one of the side stages of the cool house, the kinds mostly cultivated being ignea and distinct varieties of coccinea, such as Harryana and Lindenii. Of the popular Lycaste Skinneri there are some beautiful varieties, and in another house are many recently imported Oncidiums that are now in a semi-established condition on wooden rafts. Lælia anceps comprises all the best known varieties, and in the winter time their graceful flower spikes are fully appreciated. Cypripediums are another of the sections in which much interest is taken. Many hundreds of the best varieties were in flower at the time of making these notes; one of the largest blooms being seen in Radinshall (insigne Harefield Hall × Memnon).

Anyone paying a visit to this establishment will feel well rewarded in seeing so many robust specimens and in noting the conditions under which they are produced.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Iroquio	Bc. Mrs. J. Leemann × C. Kienastiana ...	J. P. Mossman.
Brassocattleya Jessie Moore	Bc. Digbyano-Mossiæ × C. Cappei ...	Clement Moore.
Brassocattleya La Ruhr	Bc. Thorntonii × C. Comet	M. Chassaing.
Brassocattleya Lady Vezey Strong ...	Bc. Digbyano-Mendelii × C. Mrs. P. Bigland	F. J. Hanbury.
Brassocattleya Sioux	Bc. Mrs. J. Leemann × C. Zephyr	J. P. Mossman.
Brassocattleya Yvonne	Bc. Cliftonii × C. Fabia	Clement Moore.
Brassolæliocattleya Thirza	Bc. Mrs. J. Leemann × Lc. Ixion	Charlesworth.
Cattleya Ardens	Dupreana × Hardyana	Sanders.
Cattleya Ballaurea	Ballantineana × Dowiana aurea	J. P. Mossman.
Cattleya Clinton	Dowiana × Alfred Dimock	J P. Mossman.
Cattleya Cressidæ	Cooksonii × Hardyana	Sanders.
Cattleya Falcon	Fabia × Luegeæ	Sanders.
Cattleya Marjorie	Ballantineana × labiata	Clement Moore.
Cattleya Selma	Mrs. F. Hurndell × Dowiana aurea ...	Charlesworth.
Cattleya Shenandoa	Lueddemanniana × Zephyr	J. P. Mossman.
Cattleya Timmendaqua	Fabia × Ballantineana	J. P. Mossman.
Cattleya Windsor	Dietrichiana × Venus	Sanders.
Cattleya Zeta	Cowaniæ × Dowiana aurea	McBean.
Cypripedium Clytemnestra	Aeson × Gaston Bultel	Cowan.
Cypripedium Madrigal	bingleyense × Royal George	S. Gratrix.
Cypripedium Papyrus	Earl of Tankerville × Charlesworthii ...	Mrs. Gratrix.
Epidendrum Endresio-xanthinum ...	Endresii × xanthinum	H. T. Pitt.
Læliocattleya Apache	Lc. Clonia × C. Hardyana	J. P. Mossman.
Læliocattteya Alberta	C. Tityus × Lc. Beatrice	McBean.
Læliocattleya Eton	Lc. Veitchiana × C. Warscewiczii ...	Sanders.
Læliocattleya Isolene	Lc. St. Gothard × C Rhoda	Charlesworth
Læliocattleya Marie Theresa ...	C. Fabia × Lc. Wellesleyi	M. Blévenic.
Læliocattleya Potasset	Lc. Clonia × C. labiata	Clement Moore.
Læliocattleya Quita	St. Gothard × Feronia	McBean.
Læliocattleya Sirona	Lc. Yellow Prince × C. Antiope	Charleswor h.
Odontoglossum Crispindia	crispum × Empress of India	C. J. Lucas.
Odontoglossum Desdemona II. ...	Rossii × illustrissimum	McBean.
Odontoglossum Excelsior	excellens × mirum	Sanders.
Odontoglossum Plinius	eximillus × Georgius Rex	Charlesworth.
Odontonia Papillon	M. Bleuana × O. harvengtense	P. Smith.

CORRECTION:—Lc. Viscomte Fukuba, p. 359, should read Lc. Uftona var. Viscomte Fukuba.

EULOPHIA ZEYHERI.—A recent issue of *The Flowering Plants of South Africa* (vol. iii, Oct., 1923) contains a coloured plate of Eulophia Zeyheri. The accompanying text states that "This pretty little Orchid is quite a common plant in the grass veld during the summer months, and has been extensively gathered by botanical collectors, though strangely enough it is not generally met with in gardens. It has been known to botanists for about 60 years, but under the name E. bicolor, until Sir Joseph Hooker in 1893 pointed out that this name had already been assigned to another species in the genus, and published the present name E. Zeyheri." The late Mr. H. J. Elwes grew this plant successfully in his garden at Colesbourne, Gloucestershire.

ORCHID CULTURE IN THE UNITED STATES OF AMERICA.

AN extensive trade collection of plants for cut flowers has been formed by Mr. Geo. Schlegel, of Brooklyn, N.Y. He is a great enthusiast, and emphasises in no mean terms the importance of Cattleya hybrids and Læliocattleyas for the cut-flower trade. Twelve new structures, each 90ft. by 13ft., have recently been added to his establishment.

Mr. Milosy, the manager, is very proud of his new addition, as the houses are built on different lines to those of other trade establishments. The custom in America is for huge structures ranging from 300 to 500 feet in length, and 40 to 50 feet in width. But Mr. Schlegel has built his on quite the modern lines of an English private establishment. The Cattleyas and Læliocattleyas are certainly making vigorous growths, while the species are making new growths that are longer, and stronger, than those made previously. In one house I saw large batches consisting of 1,000 plants of Lælia anceps Schrœderæ, 1,200 Oncidium varicosum, 200 On. Wentworthianum and 300 Odontoglossum citrosmum, many of the two last mentioned being in spike.

The next house contains 500 Cattleya Gaskelliana; they are magnificent plants, not large but perfectly healthy; also 1,200 Oncidium splendidum, 1,000 Cattleya Lueddemanniana, and 300 C. Thurgoodiana (Hardyana × Lueddemanniana). Another house contains a batch of 2,000 Cattleya Mossiæ which had recently been repotted, and although they looked rather distressed, I was informed that they would make a quick recovery. Their companions are 2,500 Cattleya Percivaliana specially cultivated for producing a supply of bloom during the months of November and December. In the house known as No. 4, over three thousand plants of Cattleya Trianæ are cultivated. This is the popular Cattleya in America, and all the plants are in an unusually good state of health.

On entering a large structure nearly filled with Cattleya Warscewiczii I was truly astonished, for never before had I seen so many plants of this species in flower. There were literally hundreds of spikes with from four to seven flowers and buds on each. Many of these plants consist only of five bulbs, yet they have two strong leading growths. This is the finest of summer flowering Cattleyas and realises a wholesale price of two dollars per flower. A fine sight is a batch of 2,500 plants of Cattleya Hardyana, and its variety with white sepals and petals. They follow the flowering of C. Warscewiczii and realise a similar, or slightly higher, figure. The house distinguished as No. 7 is filled with Calanthes, including the varieties known as Bryan, Harrisii, Wm. Murray and Veitchii. At the time of my visit their re-potting had recently been completed.

As the cultivation of Cattleya labiata has almost died out in England, I was greatly surprised to find the reverse is the case in the United States. Here are 3,000 of the finest plants I ever beheld. Many of them were already in a forward state of growth at the time of my visit, and when I enquired of Mr. Milosy if they would produce their flowers at too early a date, he stated that the majority of these plants make two successive bulbs each season and produce flowers on both. This impressed me as being a truly remarkable feat in the matter of cultivation. Before leaving, I saw several of these plants in which the second bulb of the season was in course of formation.

The next house contains 1,100 plants of Cattleya Dowiana aurea, and considering they have been producing bloom for ten years their condition can only be described as excellent. Many more plants of C. Hardyana alba are also to be seen, as well as 900 Brassocattleyas in many varieties. One of the houses that Mr. Milosy can indeed be justly proud of is nearly filled with unflowered Cattleyas and Læliocattleyas. They have all been selected from lists of the best crosses submitted to Mr. Schlegel from Europe. They are all in superb condition and most of them will flower during this season and the next. One of the plants pointed out to me had already flowered, and is considered to be the finest Cattleya ever seen in America. A mixed lot of flowered hybrids occupies a whole house, and a structure of similar size is filled with propagated back-bulbs, standing pot-thick and almost as large as the originals from which they have been taken.

On the other side of the central corridor is the original nursery. It comprises five houses, each 100 feet by 25 feet, span-roofed, with central staging, and an elevated pathway down the middle. There are also five other houses, each 100 feet in length, but 13 feet in width. In one of the latter I noticed 2,500 Cypripediums, mostly of the aureum type, fine varieties of Leeanum, and an excellent lot of Maudiæ. Another house contains robust plants of Miltonia Bleuana, M. Roezlii, which Mr. Schlegel remarked were always in flower, and a fine batch of M. Charlesworthii. A splendid lot of *Zygopetalum Mackayi*, comprising about 250 plants, proves to be a very remunerative item.

The popular Cypripedium insigne is represented by the giant-like variety known as Harefield Hall and the clear yellow one called Sanderæ. These are in robust condition and completely fill one of the spacious houses. Dendrobium Phalænopsis is also largely cultivated, as also is D. formosum, D. Jamesianum, and many hybrids. Excellent cultivation of these is a noteworthy feature. Oncidiums are by no means forgotten, and one of the houses is occupied by a thousand back-bulbs of Oncidium splendidum and other species. This proves a successful method of increasing the stock.

On entering the first of the larger houses in this part of the establish-

ment I was confronted with a mass of Cymbidiums. Many of them are hybrids of recent introduction, and others are fine varieties. These plants are very vigorous and without a blemish on the foliage. Suspended from the roof are hundreds of the pretty Odontoglossum pulchellum, a species that is very profitable during the spring months.

An interesting section can be seen in the large house devoted to plants that have been propagated from others known to be fine varieties. They have started growth in a vigorous way and will soon be ready to take their place in the stock houses. Another part of this nursery is devoted to Palms and Calla Elliottiana.

I was struck with the remarkable vigour of all the plants in this vast collection, and also with the cultural methods here in force. In the United States the general treatment is what we in England would call the "dry treatment." Mr. Milosy, however, ridicules this and goes to the other extreme. He uses the hose-pipe daily during the season of growth, and re-pots the plants frequently in pots obtained from England. Judging from the present health of his plants they respond gratefully to drink in the "dry" country. I have no hesitation in saying that here I found the best all-round grown plants in the United States. I shall watch the future with interest.

In the early season, instead of the usual outside shading, Mr. Milosy believes in tacking inside the houses very thin butter-muslin. This allows a good light to filter in and checks the direct rays of the sun. I owe Mr. Schlegel and his manager a grateful remembrance of their kind hospitality to me as an alien in their great country. The useful hints I took during my visit may, I hope, be of ultimate benefit to one and all.

(*To be continued.*) A.G.E.

ORCHIS FUCHSII.—In the *Report* B.E.C. 1914 (p. 99), Dr. Druce sought to prove that O. maculata, L. consisted of O. ericetorum, Linton, to the exclusion of the common Spotted Orchis, which he re-named Orchis Fuchsii, Druce. In the *Journal of Botany* for December 1923, pp. 306-9, Colonel M. J. Godfery replies to the criticism of Dr. Druce, who rebuked him for not adopting his new name (*B. E. C. Rep.* 1921, p. 314). In concluding this excellent paper, Colonel Godfery remarks that: "The most reasonable view appears to be that O. maculata, L. was an aggregate species, embracing all forms and varieties. From this elodes was separated as a distinct species in 1845, and has been maintained as a race, subspecies, or variety ever since. What is left after the separation of elodes is the variable plant, which Dr. Druce re-named O. Fuchsii, Druce. This is universally regarded as the type of O. maculata, L. The continental varieties sudetica, Meyeri, etc., are forms of O. maculata and not of elodes."

ORCHIDS AT BRISTOL.

IN spite of the inclement weather, which varied from frost to thunder and lightning, interspersed by high winds and rainstorms, excellent and varied exhibits of Orchids were collated at the 53rd Bristol Horticultural Show, held in the Drill Hall, Old Market, on November 14th and 15th.

In the groups of Orchids, 6ft. × 4 ft., in which ferns and foliage plants were allowed, W. Melville Mills, Esq. (gr. Mr. W. Chipman), was first with an ornate, though rather crowded, table consisting chiefly of well-flowered Cypripedium insigne Sanderæ, Cyp. Mrs. F. Sander, as well as forms of Actæus and Leeanum; Platyclinis Cobbiana, Odontoglossums and Cattleyas were also staged. Mr. Thoday was second with a pretty group of Cymbidium Tracyanum, Calanthe Veitchii, and Cattleya labiata; although lacking in variety, it was effectively staged with crotons. Sir Wm. Howell Davies (gr. Mr. Curtis) came third, his group consisting chiefly of Cypripediums and Cymbidium giganteum.

Sir Wm. Howell Davies was the only exhibitor in the class for three Orchids in bloom, these being Cypripediums insigne Sanderæ, Memnon and Arthurianum. For two Orchids in bloom, the first prize went to W. Melville Wills, Esq., for Cyp. insigne Sanderæ with six flowers and Cyp. Leeanum with five. The second prize was secured by Mr. Jennings with Cyp. Arthurianum pulchellum with eight blooms and a variety of Leeanum with four. The third prize went to Sir G. A. Wills, Bart., for Læliocattleya J. J. Ansaldo and a Cypripedium hybrid. A fourth entry, from Sir Wm. H. Davies, consisted of Cyp. insigne Sanderæ and Cyp. Zeno.

In the class for single specimens, Dr. Cairns was placed first with a beautiful specimen of Cymbidium Tracyanum, having two spikes and an aggregate of 33 flowers. Mr. Jennings was second with a fine specimen of Selenipedium Sedenii having nine spikes, but not all in flower. Mr. Thoday came third with a plant of Cymbidium Tracyanum, while a well-grown Cyp. insigne Sanderæ from Sir Wm. H. Davies also entered the competition.

For single specimen Cypripediums, W. J. Wilkins, Esq., was first with a fine piece of Cyp. insigne Harefield Hall, carrying six flowers and buds. Sir Wm. H. Davies was second with a similar variety, while W. Melville Wills, Esq., secured the third prize with a fine specimen of Cyp. insigne sylhetense bearing 18 flowers. Mr. H. Jennings had a fine plant of Cyp. insigne Harefield Hall, but the flowers were not sufficiently advanced.

For three distinct varieties of Cymbidiums the competition was keen. W. M. Wills, Esq., secured the first prize with three meritorious plants; insigne Sanderæ with eight flowers, insigne Harefield Hall and Leeanum superbum. The other prize winners were Mr. R. H. Jennings, with Cyp.

Arthurianum pulchellum, Leeanum superbum and Maudiæ; Dr. J. F. Cairns, with Cyp. insigne Sanderæ, Memnon and Leeanum; Sir Wm. H. Davies, with Cyp. Zeno, Leeanum and Phædon; Mrs. Bruce Cole, with Cyp. insigne, Minos and a villosum hybrid; and Sir G. A. Wills, Bart., with Cyp. Harrisianum, insigne Sanderæ and insigne Harefield Hall.

In the class for three Cattleyas, W. M. Wills, Esq., was first with labiata, Bellona and Lc. Delight; Dr. F. J. Cairns second, with labiata, Browniæ and a Læliocattleya. Dr. J. Morton Evans also entered in this class, but the flowers were considerably past their best. For three Oncidiums, W. J. Wilkins, Esq., was first with O. varicosum Rogersii and O. Forbesii, while Dr. J. Morton Evans came second with O. oblongatum, aurosum and varicosum Rogersii.

For three Orchids in bloom, H. A. White, Esq., was first with a well-flowered plant of Maxillaria picta, Odm. grande and Cattleya Wilsoniana. W. J. Wilkins, Esq., was second with Lycaste Skinneri, Cyp. Alabaster, and a fine variety of Cyp. Hitchinsiæ. J. F. Phipps, Esq., of Devizes, came third with Cyp. insigne Sanderæ, Dreadnought, and a variety of insigne. Dr. Morton Evans entered with three Cattleyas.

In the class for six dissimilar Cypripedium hybrids, W. J. Wilkins, Esq., exhibited a prettily marked Troilus, Actæus exquisitum, insigne Sanderæ Keeling's var., Hannibal, Lucifer, and a beautiful hybrid near to Actæus, all well-grown and flowered. J. F. Phipps, Esq., came second with Triumphans, Germaine Opoix, Penelope, Fowleri, Hitchinsiæ and a hybrid of Charlesworthii, the plants were unfortunately on the small side. Dr. J. Morton Evans, and F. J. Cairns, Esq., shared the third prize; both had by mischance included a variety of insigne.

The first prize for a single specimen Orchid, went to Dr. F. J. Cairns, for Cyp. Leeanum Clinkaberryanum with four flowers; W. J. Wilkins, Esq., was second with Cyp. Arthurianum pulchellum, bearing seven flowers, and J. F. Phipps, Esq., third with Cyp. insigne having seven flowers.

In the class for six Orchids, W. J. Wilkins, Esq., gained the first position with Cyp. Arthurianum, Cymbidium Tracyanum, Lycaste Skinneri, Cyp. insigne Harefield Hall, Odm. Pescatorei and Cattleya Bowringiana. Dr. J. Morton Evans, was awarded second prize for two plants of Cattleya labiata, Lælia Iona, Lycaste Skinneri, Cyp. The Great Mogul, and nitens.

For Bouquets, the first prize was won by Mr. Curtis, gardener to Sir Wm. Howell Davies, for an effective arrangement of Odontoglossum spikes, Cypripediums and white Chrysanthemums. This exhibitor also secured premier positions for Buttonholes and Sprays, the second prize in the latter class going to Mr. Thoday.

Gold Medals were awarded to Messrs. Sanders, St. Albans, Messrs. Cypher & Sons, Cheltenham, and Messrs. A. J. Keeling & Sons, Bradford.

CULTURAL NOTES.

THE following cultural notes have been selected from back volumes of the *Orchid Review* :—

RESTING OF DENDROBIUMS.—The process adopted in the Gatton Park gardens is as follows: From the middle of August we admit a little air from the side or top ventilators at night, never much. The time of shading is also very gradually reduced, scarcely altering the supply of water till the new bulbs assume a golden colour, when the water is gradually reduced, but we never withhold it long enough to cause any shrivelling of the bulbs. During November and early December we allow them to remain dry as long as possible, and if they are properly matured they will go several days without harm, maintaining a minimum temperature of 55° till the New Year, by which time the buds will be pushing fast, when the temperature may be raised five degrees at night, and rather more water given.—*W. P. Bound, March*, 1906.

DAMPING AND VENTILATION.—In the hot houses, where a large amount of fire-heat will, of necessity, be used, damping down will have to be done to a good extent, but very much will depend upon the structure of the house, and the manner in which the damping down is performed. It is advisable to have a hose-pipe fixed in each house, which makes damping an easy matter and, at the same time, ensures its being thoroughly done. Some houses will smell fiery, while others with a much higher temperature will be beautiful and mellow. If a house is well provided with moisture-holding material, such as coke or sand on the lower staging, with vegetation of some kind or another on the floor, and a good supply of piping, a high temperature can be secured, which will be of a healthy order. We find damping down once a day during the winter sufficient in our houses, excepting during periods of hard frost. It may not be found necessary to damp the Odontoglossum houses even once a day, as there is less artificial heat to lift the moisture, but as air should be admitted here on all possible occasions, there is not much danger from excess of moisture in this house. The thing to avoid here is stagnation rather than too much moisture. The inmates of this house love a moist, buoyant and cool atmosphere, and when the Odontoglossums are not throwing up spikes they will be more or less in active growth. Air should be admitted to all the houses, by night and day, by the bottom ventilators when the weather is at all favourable, taking care to avoid cold currents when windy by closing them on the windward side. On specially fine days, when the wind is in the south or west, the Cattleya and Intermediate houses will benefit by having a little top ventilation as well—if only for an hour.—*J. M. Black, January*, 1906.

ODONTOGLOSSUM ROSSII.—This is an exceedingly useful and popular

cool-house species, and is just now commencing to produce its pretty flowers in abundance. This is probably the hardiest of all exotic Orchids cultivated under glass. I have known other cool species to perish from cold, but never this one unless actually frozen. It is certainly best grown suspended, for several reasons. Firstly, because it appreciates an airy position. Secondly, because it prefers much less water at the roots at all seasons than most species; and, thirdly, because it resents root disturbance. If the above little matters are remembered, O. Rossii will rarely require to be pulled about for the purpose of re-potting, because its roots will remain perfectly healthy in their confined space—a small receptacle seeming to suit them best. The foliage will also be perfect, not decaying at the apex, as it is prone to do.—*H. A. Burberry, January*, 1899.

CYPRIPEDIUMS.—Cypripediums belonging to the warm section comprise a large class of beautiful and useful Orchids, a great many of which may now require attention, as new growths are advancing, and these will quickly be emitting new roots. Turn out the plants that are needing attention, and remove all decayed compost and as many of the dead roots as possible. Then select pots of suitable size, and insert the plant to be potted, working in a quantity of compost amongst the roots to within a few inches of the rim, and fill the remaining space with fibrous loam, together with small pieces of sandstone and broken crocks. This will be found a suitable compost for such species as Stonei, Sanderianum, Rothschildianum, philippinense, and most of the Selenipedium group.—*John Mackay, January*, 1903.

STOVE HOUSE.—In the Stove Orchid house constant observation is necessary at this season to see that no drip or condensation is causing havoc among the tender inmates. It may be necessary to withhold damping down altogether during cold and inclement days, to prevent the plants being saturated with moisture in the morning, especially if the situation is a low and damp one, or if the house is one that naturally holds much moisture. Some houses contain more humidity without damping than others do with it, so that it is important that each house be considered individually and treated accordingly. In the Cattleya house the flower buds on Cattleya Percivaliana and C. Trianæ are now fast pushing up, and the lightest position should be given them from now till after the flowering period is over. Rather more water than they have been receiving since the completion of growth is essential to properly develop their flowers, reducing the supply again directly the latter are removed, and continuing this course till growth activity is in evidence. This also applies to any of the hybrids now developing flowers.—*W. P. Bound, January*, 1907.

INTERMEDIATE HOUSE.—The deciduous Calanthes have made, and will continue to make, a grand display. As they go out of flower, they may be

taken out of their pots, and placed in boxes on a shelf in the Cattleya house until required for potting later on. Lælia anceps and varieties are just now at their best. When out of flower they should be quietly rested, affording water sufficient to keep the pseudobulbs firm. L. Gouldiana, L. autumnalis, and L. albida require the same treatment when out of flower. Cœlogyne cristata will have its spikes well advanced. Water should be applied moderately at this stage, for the least excess at the roots or in the atmosphere will often cause them to decay.—*John Mackay, January*, 1902.

TEMPERATURES.—In the case of insufficient hot-water pipes, which require to be made very hot to keep up the temperature, a thick covering should be used outside on the roof of the house, so that less warmth in the pipes will suffice. I have occasionally left the house so covered a whole day in very tempestuous and cold weather, finding it better for the plants than to suffer from cold or excessive fire heat. It is best to have enough pipes, so that it is not necessary to make them too hot. A nice moist atmosphere is generated by placing over the hot-water pipes, and about six inches above them, a row of plates or tiles, on which are placed from time to time a few undecayed leaves, which, together with the floors and side walls, syringed once a day, will generally give off enough moisture for this time of year.—*H. A. Burberry, January*, 1894.

PLEIONES.—These are of exceptionally easy culture, and are certainly worth growing well, for well-bloomed pans or baskets during the months of September to November are most attractive. As in all other species, the stronger the pseudo-bulbs, the better and more perfect will be the flowers. A common error made is to rest the plants after blooming and re-panning. Immediately after blooming new growth commences, and if re-panning is intended it should then be done, the plant afterwards being placed in the cool house, near the roof glass, and kept moderately moist. Growth will then be slow, but sturdy, and when spring arrives they should be taken to a sunny position in the Cattleya or Intermediate house. The compost should be lumpy peat or sphagnum moss, a little leaf-soil or fibrous loam and sharp sand may also be mixed in with advantage. The bulbs, having no old live roots, must be made firm with the aid of wooden pegs, so that new roots, when they appear, may grip the compost and remain firm. The bulbs must not occupy too much space, but be set pretty thickly, leaving just room between each bulb for the new ones to grow and expand. It is not always necessary to re-pot every year. Two inches of soil is quite sufficient, and I prefer to leave the surface fairly level, raising the centre only slightly, the whole then gets an equal amount of water.—*H. A. Burberry, January*, 1900.

PROPAGATION.—We have practised, with good results, the principle of cutting away the front portion of plants that have overgrown the pot or pan, taking off sometimes only the leading bulb, in other cases two and

sometimes three bulbs. When that is done we do not disturb the old plant till the following year, beyond perhaps the renewal of any sour surface compost, which is replaced with new. When an old specimen has several leads, if it is thought desirable, a young vigorous specimen may be made, and one that is not and will not be retarded with useless back pseudo-bulbs for some considerable time. When this has been done we often find that the severed parts break back, as well as forward, much more frequently than when they are attached to the parent plant. If it is not desirable to make up a specimen plant, pot up each piece separately, and this method has points in its favour. In the first place they can be suspended close to the light—an important item—without making an ugly effect, or impeding much light; then, as they are generally very uncertain in producing flower spikes, the smaller flowering plants can be used better for decorative or exhibition work than is the case when a large specimen has only one or two spikes. I would not like to discourage the growing of specimens when suitable room can be given them, and when a specimen is well-flowered it is an object of more than ordinary beauty, but if a well-exposed position cannot be given to specimens better results will be attained in smaller pots or pans.—*W. P. Bound, January*, 1907.

LAWRENCE MEDAL.—The Lawrence Medal for 1923 has been awarded to Messrs. Charlesworth & Co. for their meritorious exhibit of Orchids at the Chelsea Show.

BRITISH ORCHIDS.—Under the title *Some Notes as to British Orchids*, 1923, Mr. C. B. Tahourdin, of 86 Manor Road, Wallington, Surrey, has compiled particulars regarding forty British Orchids. The past year, he says, has been a difficult one for Orchids. They began rather early in Sussex and Kent, but were disappointing later. Localities from which in former years he had been sure of obtaining specimens failed entirely. Increased interest is given to this booklet by the inclusion of photographic plates depicting Cypripedium calceolus, Spiranthes æstivalis and S. Romanzoffiana.

LÆLIOCATTLEYA UFTONA.—There is an error on p. 357, the hybrid between L. purpurata and Lc. highburiensis, recorded as Lc. Viscount Fukuba, is not new. It was raised by me some years ago and recorded at Lc. Uftona, from the village Ufton, in Warwickshire, of which my father, Rev. Geo. F. Clark, was formerly Rector. The flowers of this hybrid differed much in shape, and varied from bronze-red to rose-purple.—EUSTACE F. CLARK, Folkestone. [Lc. Uftona is the correct name for this hybrid. It was originally recorded in the *Orchid Review*, July, 1912, p. 198, *G.W.*]

ROYAL HORTICULTURAL SOCIETY.

November 27th, 1923.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. sec.), R. Brooman White, J. Wilson Potter, T. Armstrong, H. T. Pitt, Fred. K. Sander, H. G. Alexander, Chas. H. Curtis, Gurney Wilson, and Hon. Henry D. McLaren.

FIRST-CLASS CERTIFICATES.

Cypripedium Gwen Hannen (Florence Spencer × Christopher var. Grand Duke Nicholas); from G. F. Moore, Esq., Chardwar, Bourton-on-the-Water, Glos. (gr. Mr. W. H. Page). A remarkably fine hybrid carrying forward the well-known qualities of Cyp. Christopher. The large white dorsal sepal measures over four inches across, has a small greenish area at the base, and is marked with a few vertical lines of purplish spotting; the petals and pouch honey-yellow tinged with brown.

Cypripedium Chrysostom var. Amy Moore (Christopher var. Grand Duke Nicholas × Pyramus magnificum); from G. F. Moore, Esq. The largest of the four noble Cypripediums staged by this amateur. The dorsal sepal is well over four inches in width, the lower half greenish and lightly spotted with crimson-purple; the petals and pouch tinged with mahogany.

Cypripedium Chrysostom var. Richard Fort; from G. F. Moore, Esq. A fine variety in which the dorsal sepal is broadly developed, white, with purple spotting; the petals and pouch being equally attractive.

Cypripedium Prince Albert var. Mecca (Tommy Curte × Pyramus magnificum); from G. F. Moore, Esq. The large dorsal sepal in this is white, heavily spotted with crimson-purple, the petals very broad, honey-yellow on the lower half and mahogany-red on the upper part; the labellum straw-yellow tinged with purple.

CULTURAL COMMENDATION.

To Messrs. Armstrong & Brown for an attractive specimen of Læliocattleya Schrœderæ var. The King, bearing a spike of seven large flowers, sepals and petals cream-white, the lip bright crimson-purple.

Messrs. Sanders were awarded a Silver Flora Medal for an excellent exhibit, containing a fine example of Vanda Watsonii, Maxillaria venusta magnifica and a varied selection of Dendrobium Phalænopsis. Two novelties were seen in Cattleya Cressida (Cooksonii × Hardyana alba) and Læliocattleya Troila (C. Rex × Lc. Canhamiana Rex). Other Cattleyas were Kienastiana Sanderæ, with pretty flowers, Princess Royal, of fine formation, and Bc. Mrs. J. Leemann, yellow with rose shading. Cymbidium Doris and Sophrocattleya Saxaurea were also in fine condition, while Cypripediums were well represented. A rarity was staged in Barkeria

Lindleyana, with an erect spike of rose-coloured flowers; it is also known under the name Epidendrum Lindleyanum.

December 11th, 1923.

Members of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), Messrs. Jas. O'Brien, G. F. Moore, R. Brooman White, C. J. Lucas, Clive Cookson, W. H. White, Arthur Dye, Fred. K. Sander, H. T. Pitt, J. E. Shill, S. W. Flory, J. Cypher, T. Armstrong, Henry H. Smith, E. R. Ashton, Frederick J. Hanbury, Stuart H. Low, J. Wilson Potter, J. Cypher, Gurney Wilson, Chas. H. Curtis, and Dr. Craven Moore.

FIRST-CLASS CERTIFICATES.

Cypripedium Chrysostom, Chardwar variety (Christopher var. Grand Duke Nicholas × Pyramus), from G. F. Moore, Esq., Chardwar, Bourton-on-the-Water, Glos. (gr. Mr. Page.) An immense flower in which the broadly developed dorsal sepal is white with a greenish base and light rose spotting; petals and pouch honey-yellow tinged with red-brown.

Cypripedium Gwen Hannen, Chardwar variety (Florence Spencer × Christopher), from G. F. Moore. Esq. The immense dorsal sepal of this handsome flower is roundly formed, white, and with greenish-yellow lines radiating from the base; petals and pouch straw-yellow tinged with reddish-brown.

Cypripedium Prince Albert, Chardwar variety (Tommy Curte × Pyramus). A very handsome flower, and the richest in colour yet seen of this hybrid. The dorsal sepal suffused with rose-purple, and having a narrow whitish margin; petals very broad and of mahogany-red colour.

AWARDS OF MERIT.

Cypripedium Warrior var. H. Green (Lord Wolmer × Alcibiades), from Messrs. Armstrong & Brown. A fine result of model proportions. The large orbicular shaped dorsal sepal of light greenish colour and evenly spotted with purplish-red; petals broad, reddish in colour, and the lip reddish-brown.

Sophrolæliocattleya Eileen, Low's variety (Slc. heatonensis × C. Moira). A particularly pleasing hybrid that carried a spike of three flowers, the colour being soft rosy-crimson, the lip darker, and the column whitish.

GROUPS.

G. F. Moore, Esq., Chardwar, Bourton-on-the-Water (gr. Mr. Page), was awarded a Silver-gilt Lindley Medal for an exhibit of magnificent Cypripediums. They comprised over 80 large plants, many bearing several flowers. All had been raised in this amateur's own garden, and reflected the greatest credit, both in the perseverance of breeding and in cultivation.

Among the best mention may be made of Cyp. Cotswold Star, Mrs. Eley, W. H. Page, Actæus, and Memoria F. M. Ogilvie. No less than seven First-class Certificates have been gained by this successful amateur at two R.H.S. meetings.

Messrs. Sanders, St. Albans, were awarded a Silver Flora Medal for an attractive group containing examples of Odontoglossum Humeanum, the pretty Cypripedium Nydia, well-flowered Lælia Gouldiana, and Cymbidium Doris with a many flowered spike. The Brassocattleyas included Minerva and Enchantress, while Læliocattleyas were well staged in Schrœderæ, and Odontiodas in Latona, of rich reddish colour,

Mr. Harry Dixon was awarded a Silver Banksian Medal for an elegant group of Cypripedium insigne Sanderæ, comprising 20 well-grown plants with an average of seven flowers on each. In the centre was a fine example of Cypripedium conspicuum × Beeckmanii, elegant in shape and of yellowish colour heavily tinged with mahogany-red.

Messrs. Flory & Black staged a selection of choice Cypripediums, including Chloris with bold spotting; Maisie, large and attractive; and Odin, with a white dorsal sepal.

H. T. Pitt, Esq., Stamford Hill, staged a nice example of Angræcum distichum and Gomeza Barkeri.

Sir Horace Monro, Woodlands, Binfield, Berks., sent two flowers of Cypripedium insigne imported some years ago, one being the variety Maulei, the other approaching C. insigne Bohnhofianum.

Messrs. Stuart Low & Co. staged Cattleya Syros Low's variety (Enid × labiata) with two large flowers of rosy-mauve colour, the immense lip rich purple, and having the margin prettily crisped.

Messrs. Armstrong & Brown exhibited Cypripedium Luna (Desdemona × Mrs. Cary Batten), a neatly formed flower with the dorsal sepal of round shape.

LÆLIA JONGHEANA.—This attractive species was originally discovered in Brazil, about the year 1854, by Libon, and sent to M. de Jonghe, at Brussels. The flowers are about five inches across, with the segments flatly displayed, and of soft rose-purple colour. A conspicuous feature is the bright yellow colour on the ridged throat of the labellum.

LÆLIA XANTHINA.—Introduced by Messrs. Backhouse, of York, from Brazil, in 1858. Flowers about three inches in diameter, buff-yellow, except the anterior lobe of the lip, which is white, streaked with crimson-purple. It is a parent of several hybrids in the yellow section, notable examples being Lc. Ophir, Lc. Phryne and Lc. Thyone.

CYPRIPEDIUM VEXILLARIUM.

NEARLY all the primary hybrids of Cypripedium Fairrieanum possess a singularity of formation that appeals to cultivators of this easily grown genus of plants. Cyp. vexillarium, the result of crossing barbatum with Fairrieanum, was raised by Dominy for Messrs. Veitch & Sons, and first flowered as long ago as 1870. Not only is it of interest as being the second

CYPRIPEDIUM VEXILLARIUM VAR. REX.

hybrid Cypripedium to be produced, but it represents the first of the many Fairrieanum crosses that have been recorded on various occasions. The erect dorsal sepal, with its vertical lines of colour, is well balanced by the lateral petals with their similar style of colour markings. The original form of C. vexillarium received a First-class Certificate when exhibited at the Royal Horticultural Society, January 18th, 1921. Our illustration of the variety Rex shows a larger and darker flower. Cyp. vexillarium is well worthy of inclusion in an amateur's collection.

THE ORCHID CLUB.

THE first meeting for the exhibition of plants, held December 14th, was remarkable for the large number and fine quality of the Odontoglossums and Cypripediums. At 3 o'clock Professor W. H. Lang, F.R.S., gave a short address on Neottia Nidus-avis, the Bird's Nest Orchid, as exemplifying in the most typical way the important commensalism which obtains between the Orchid and its associated fungus. He also discussed the work which had already been done on the substitution of special nutrition for fungus action in the early stages of Orchid development.

PREMIER DIPLOMA.

Cypripedium Chrysostom var. Richard Fort (Christopher var. Grand Duke Nicholas × Pyramus magnificum), from G. F. Moore, Esq. A large flower, the dorsal sepal, 4½ inches transdiameter, is flat and well displayed, white, with a small green luna and purple spots radiating up on to the white ground; the petals and lip are in good proportion, well displayed, and in colour greenish-yellow, tinged with mahogany-red.

GROUPS.

Fred Hardy, Esq., Ashton-on-Mersey (gr. Mr. C. Branch), exhibited a magnificent group of exceedingly well-grown Odontoglossums carrying full spikes. It contained 16 of the xanthotic section and eight coloured forms, amongst which O. Hardyanum, carrying a full spike of 15 flowers, was remarkable for the substance, size, perfect form and colouring of the flowers, akin to that of the amabile section. A new Odontioda hybrid, with only four flowers open, was of superlative excellence.

G. F. Moore, Esq., Bourton-on-the-Water (gr. Mr. Page), exhibited a small group of the wonderful new Chardwar hybrid Cypripediums, including Cyp. Mrs. Eley, Chrysostom var. Grace Darling, Our Prince, W. H. Page, Memoria F. M. Ogilvie, and cut blooms of Chrysostom Chardwar var., Gwen Hannen Chardwar var., and Prince Albert Chardwar var., all of which were awarded F.C.C. at the R.H.S. meeting on December 11th.

B. J. Beckton, Esq. (gr. Mr. W. A. Stewart), exhibited a large group of mixed Orchids. The centre consisted of Cœlogyne barbata with plants of Lælia Gouldiana and Epidendrum vitellinum, the ground work being well-grown Cypripediums, including Cyp. Ballyhandy, Daisy Bank var.; Warrior, Green's var.; and The Major, Daisy Bank var. Finely grown plants of Oncidium cheirophorum were also staged.

Dr. F. Craven Moore, Manchester, exhibited a selection of Cypripediums, including Madam Albert Fevrier var. Oxford, a fine variety of Charlotte Dillon, Corsair, Holdford's var., and Monialis.

A. T. Cussons, Esq., Kersal (gr. Mr. F. Cookson), staged a good group

of Cypripediums, including Kervallii, Thalia, Maudiæ magnificum and beechense, as well as Trichosma suavis and others.

Dr. Hartley, Wigan, had an effective group, in which Cypripedium John Hartley, fine forms of Oncidium Forbesii and well-flowered plants of Platyclinis Cobbiana were conspicuous.

The Hon. H. D. McLaren, Bodnant (gr. Mr. F. C. Puddle), showed several interesting plants, including a good form of the beautiful Cypripedium Albion.

Sir William Thom, Athol House, Blackburn, staged a few Cypripediums, including burtonense and a pretty variety of Sanacderæ.

J. H. Walker, Esq., Oak Cottage, Eccles (gr. Mr. C. Weaver), exhibited a fine group of Cypripediums, among which various varieties of C. Maudiæ were conspicuous.

Messrs. Cypher & Sons showed a large and effectively arranged group, comprising many well-known varieties of Cypripediums, Cattleya Astron, Oncidiums, and well-flowered plants of Masdevallia tovarensis.

MANCHESTER ORCHID SOCIETY.

November 8th, 1923.

MEMBERS of the Committee present :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Birchenall, A. Coningsby, D. A. Cowan, J. Cypher, J. Howes, J. Jackson, D. McLeod, E. W. Thompson, and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES.

Brassolæliocattleya maculata magnifica (Blc. The Baroness × Lc. Thyone) ; from S. Gratrix, Esq. Flowers of perfect shape, petals canary yellow, sepals and lip a richer shade of yellow, the labellum beautifully frilled and margined with rose.

Odontonia Papillon (M. Bleuana × Odm. harvengtense) ; from P. Smith, Esq. A very fine hybrid, flowers heavily spotted with reddish brown on a rich yellow ground.

AWARDS OF MERIT.

Odontoglossum Mrs. James Wood, O. crispum Rosy Rapture, O. promerens var. Sunbeam, Cypripedium Bright Eyes, Cyp. Madrigal (Chorltonii × Royal George), and Lc. Dr. R. Schiffman var. Eastern Monarch ; from S. Gratrix, Esq.

Cypripedium J. M. Black, West Point var., Cyp. Papyrus, and Lc. Glory var. Golden King ; from Mrs. Gratrix.

CULTURAL CERTIFICATES.

To Mr. J. Howes for Odontoglossum Mrs. James Wood, O. crispum Rosy Rapture, O. c. Ada Evans, Cattleya Portia, and Lc. Dr. R. Schiffman var. Eastern Monarch.

GROUPS.

A Silver-gilt Medal was awarded to S. Gratrix, Esq., for an exhibit of various Orchids; a Large Silver Medal to Messrs. Cypher & Sons for fine Cattleyas and Cypripediums. Messrs. Cowan & Co., Messrs. Stuart Low & Co., and Mr. D. McLeod also staged various plants of interest.

November 22nd, 1923.

Members of the Committee present:—R. Ashworth, Esq. (in the chair), Messrs. A. Coningsby, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Evans, J. Howes, J. Jackson, A. Keeling, D. Losh-Thorpe, E. W. Thompson, and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES.

Cypripedium Maudiæ, Westonbirt var., the finest variety of this popular hybrid; from Messrs. A. J. Keeling & Son.

AWARDS OF MERIT.

Cypripedium Major Keppel and Cyp. Mrs. Keppel (parentage of both unknown); from the Hon. Robt. James.

Odontoglossum promerens rotundum; from P. Smith, Esq.

Cypripedium Mrs. James Wood (parentage unknown); from James Wood, Esq.

GROUPS.

A Large Silver Medal was awarded to Messrs. Cypher & Sons for choice Cypripediums and Cattleyas. Other exhibitors included Messrs. Charlesworth & Co., Messrs. Keeling & Son, and Mr. D. McLeod.

CYPRIPEDIUM HOOKERÆ.—An attractive species discovered by Sir Hugh Low in North Borneo, in 1862, and introduced shortly afterwards by Messrs. Low & Co. It was subsequently found by one of Messrs. Veitch's collectors, growing on limestone hills in Sarawak, at 1,000—1,500 feet elevation. It is dedicated to Lady Hooker.

ONCIDIUM MICROCHILUM.—Mr. G. Ure Skinner discovered this species in Guatemala in 1838. He remarked that it was found on the top of the Cuesta of Puentezuelas, growing on a bare rock, with a quantity of dead leaves and grass about its bulbs, and its roots woven into the interstices of the rock; it was much exposed to the sun, except during the middle of the day, when a ledge of rock seemed to afford it a little shade. He afterwards found it in great abundance on the rocky banks of the river Mitchatayal. O. microchilum is remarkable for the almost obsolete intermediate lobe of the labellum, and for the variety of colours present in the flowers, which are variable in this respect.

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Founded in 1893 by R. A. ROLFE, A.L.S.

Edited by GURNEY WILSON, F.L.S.

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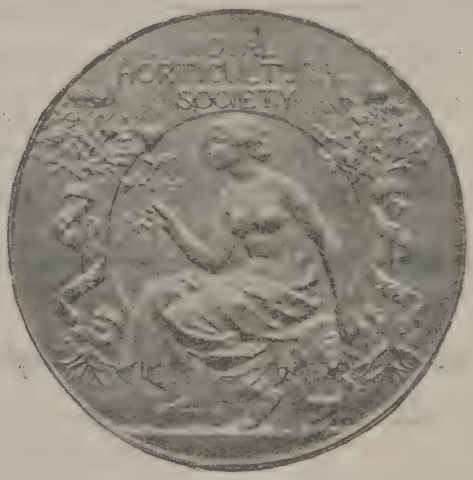

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THE ORCHID REVIEW.

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NOTES.

SARCOPODIUM LYONII.—I was much interested to see in the November issue the picture of my plant. This Orchid was sent to me under the name Dendrobium acuminatum, but I found that it was not absolutely identical with the figure given by Mr. Oakes Ames in *Orchidaceæ*. I am now glad to know that it is Sarcopodium Lyonii. I am sorry to say that this plant perished, as did half my collection of Orchids, during the war. But those that survived are again growing well. It is very difficult now to receive new plants, and I expect that the prices of imported Orchids are also very high now in England.—*Dr. Heinrich Miller-Aicholz, Vienna, Austria.*

EXPORTING ORCHIDS TO AUSTRALIA.—A consignment of Orchids, including Brassocattleyas, Læliocattleyas, Sophrocattleyas, Cypripediums, Odontoglossums, and Odontiodas, numbering over 250 plants, was shipped by Mr. A. McBean, of Cooksbridge, England, to various members of the Victorian Orchid Club, East Malvern, Melbourne, and arrived without the loss of a single plant. Considering they were about six weeks on the journey and travelled over 12,000 miles, I think it is worthy of being placed on record, All the plants arrived in excellent condition.—*David J. W. Chandler, Honorary Secretary, The Victorian Orchid Club, Australia.*

CYPRIPEDIUM DAMASCUS VAR. HYALE.—From the collection of the Hon. Henry D. McLaren, Bodnant, Tal-Y-Cafn, N. Wales, Mr. F. C. Puddle sends a flower of Cypripedium Damascus. It is distinguished by the varietal name Hyale and takes the form of a glorified C. insigne. In size it is larger than C. insigne var. Harefield Hall, while the dorsal sepal carries bold spots of crimson-rose colour. C. Damascus (Dreadnought × Earl of Tankerville) was first recorded by Messrs. Sanders in 1918. The flower sent by Mr. Puddle was produced through the use of Dreadnought var. Goliath, and it carries forward the good points of it as well as the wide dimensions of C. villosum. An analysis of the parentage shows that C. Damascus is almost entirely made up of insigne and villosum, the only other species included being C. exul.

THE AMATEUR ORCHIDIST AS AN EXHIBITOR.

BY THOMAS INGLIS, M.D., EDINBURGH.

I WAS rather interested, as a one time grower, and as a prospective future grower of Orchids, in the references made in the January number of the *Orchid Review* by Mr. L. W. Dixon and "Amateur" in relation to R.H.S. Orchid classes for small growers, and R.H.S. Shows respectively. In the *Orchid Review* for May, 1922, Mrs. Josephine Walker, evidently an ardent amateur, referred to the same subject.

There are three Orchid challenge cups for competition at the spring and autumn shows of the Royal Horticultural Society, two of which are open to such amateurs who do not employ more than three assistants, including a head gardener, the other cup being open to all amateurs, no restrictions being made in the number of head gardeners and assistants employed. This cup has evidently been put up for amateurs of the millionaire class, whose collections have been described on various occasions in the *Orchid Review*.

Regarding these trophies, I believe that the trade-growers are the donors in two instances. Why should there not be a series of trophies for competition throughout the year amongst the large circle of the smaller growers who attend personally to the individual wants of their plants, and who are more truly representative of amateurism than the men who are the big noise in the Orchid world?

I often wonder why the Orchid Committee of the R.H.S. do not make a bigger effort to make Orchid growing more popular amongst the small men by instituting classes in the various sections of Orchids for competition. As presently constituted, the Orchid Committee is composed of the bigger amateurs, professional gardeners, and representatives of the different trade growers, the one section relying on the other, and one can quite understand the motives of the trade in putting up cups for competition for those amateurs who, as Mr. Dixon puts it, are after each other's blood. Why should the smaller amateurs not be represented on the Orchid Committee? When that time comes the small growers residing at a reasonable distance from London will be in a position to compete in various classes at the spring and autumn shows of the R.H.S.

One would like to see similar competition under the auspices of the R.H.S. in conjunction with the local horticultural societies in other centres, such as Manchester, Glasgow, or Edinburgh. Unfortunately, few opportunities are given to the small amateur to compete in classes for Orchids at the innumerable horticultural shows held throughout the country. Surely it is time for the Orchid Committee of the R.H.S. to move in the matter.

EUROPEAN ORCHIDS.

THE *Album des Orchidées d'Europe*, of which a preliminary notice was given on page 354 of our December issue, is fully up to the high standard promised. The 66 coloured plates are excellently produced, and afford a ready and reliable means of identifying the various Orchids inhabiting the Mediterranean littoral. The author, M. Henry Correvon, who has been a cultivator of these plants since 1868, and is a recognised authority on them, has supplied much valuable information in this recent addition to Orchid literature.

The first part of the work deals with the distinguishing points of the three different groups of terrestrial Orchids. They are (1) Saphrophytes, which are destitute of leaves and chlorophyll, but nourish themselves from organic substances contained in the wood-soil. The section is ill-adapted to all acclimatisation and culture. (2) Epiphytic Orchids, belonging to the hot countries, and which grow on the branches of trees, or the crevices of rocks, and send out aerial roots in all directions. These roots are not of the same nature as those of the terrestrial plants, because their functions are different. (3) Terrestrial Orchids, of which the roots and tubers absorb from the soil water and mineral elements that are transformed into organic matter. Their root system is formed of a rhizome (Goodyera), or of simple fasiculated roots (Listera), or of tubercles in which the nutritive matter is stored.

M. Correvon remarks that "it is more than 40 years since the Rev. Wooley Dod, of England, wrote to me describing the charms of his collection and which animated my friend, G. F. Wilson, to show me the first attempts at acclimatisation in his famous garden at Wisley, now used by the Royal Horticultural Society." Wilson commenced with Orchis foliosa, from Madeira, and developed his collection by adding Orchis and Ophrys from the continent. Mention is also made of the beautiful collection of terrestrial Orchids formed at Twickenham by the Comte de Paris about 1860, and also several noteworthy collections that existed on the continent. The most complete collection of terrestrial Orchids existing to-day is to be seen in the beautiful garden of Mr. W. H. St. Quintin, of Scampston Hall, Rillington, Yorks., while the majority of English Orchids are equally well cultivated in the extensive rock-garden of Mr. F. J. Hanbury, at Brockhurst, East Grinstead, Sussex.

The second chapter is devoted to a study of the vegetative habit and geographical distribution of terrestrial Orchids, their variation, utility and fertilisation. Dr. G. Keller, of Aarau, possesses the most extensive collection of water-colour drawings of terrestrial Orchids. He has a 1,000 plates representing as many species, types, varieties and different hybrids,

and he intends to publish them when conditions again become normal. The text which he has prepared on the subject, and which is the result of a long and serious study, as well as of observations pursued during a number of years, will shortly be printed and made available for use. It will be strictly scientific, in Latin for the diagnosis of the species, and in German for the varieties and hybrids.

Mention is also made of the water-colour drawings prepared by the late Prof. Charbonnel, of Saint-Claude (Jura). He had brought together a complete collection of all the Jurassic Orchids, in 53 water-colour drawings, the publication of which was unfortunately stopped by his death. Credit is also given to Colonel M. J. Godfery, for no one has better studied the meridional species than he, and to Mrs. Godfery for her artistic and faithful style of painting. Among others who have studied these plants are Dr. T. Stephenson and M. E. G. Camus.

M. Correvon recalls the fact that Dr. Planchon has recorded in the Montpellier Medical of 1892 the presence, in the leaves, of coumarin, the principal odour contained in the Tonquin bean, and which is similar to that existing in the Vanilla Orchid. It exists in the leaves of Orchis militaris and O. simia, and especially in Aceras anthropophora and A. longibracteata, but the perfume is only in evidence when the leaves are in a dry state. The Arabs have for a long time known of the principal odor of Aceras, the dry leaves of this plant having the taste of vanilla.

The third chapter is devoted to descriptions of the various species, while chapter four deals with the acclimatisation of Orchids in gardens, and brings to a close the 66 pages of interesting letterpress. The coloured plates are placed together at the end of the book, and each bears the botanical and common name, as well as a few words concerning the plant's locality.

ODONTOGLOSSUM ODIN.—From Robert Paterson, Esq., Stamperland House, Cathcart, Glasgow, we have received flowers of a richly-coloured variety of Odontoglossum Odin, a hybrid between crispum and Aireworth that was recorded by Messrs. Stuart Low & Co. in 1922. O. Aireworth is made up of crispum, Pescatorei and Harryanum, but as the reddish colour seen in Mr. Paterson's flower is not contained in either of these species we must consider it to have originated in a blotched crispum, which, as now understood, is a hybrid between the typical white crispum and a reddish-brown species, probably O. luteopurpureum.

R.H.S. SPECIAL SHOWS.—In addition to the Special Orchid Shows mentioned on p. 10 of our last issue, the Autumn Show of Orchids will be held on October 21st and 22nd, and December 2nd is reserved for Cypripediums.

ORCHID CULTURE IN THE UNITED STATES OF AMERICA.

MY next visit was to the collection of J. E. Dixon, Esq., Elkins Park, Philadelphia, where I was met by Mr. J. Goodier, a well-known grower, who for many years had charge of the Roebling collection. Mr. Goodier was proud to point out to me many of the noted plants that were purchased from the last mentioned collection by his present employer when it was dispersed. Here I saw some finely grown plants of the various Cattleya species in a large span-roof house, but very few novelties or choice varieties, as the collection is what we would call a miscellaneous one to meet the requirements for cut flowers. Mr. Goodier gave me hope that the time is near when some of the finer reputed Orchids will be added to this collection, but first of all a mansion is to be built.

I noticed quite a number of Cattleya and Læliocattleya hybrids, some of which were in flower and of a useful type for general purposes. Cymbidiums in variety are great favourites on account of their lasting qualities. I also saw well-grown plants of Dendrobiums in great variety, and a healthy batch of Cypripediums. I hope to be able to add much more detail respecting this collection at a future date.

The establishment of Messrs. G. Baldwin & Co., Mamaroneck, N.Y., had developed into the leading house in the States for imported Orchids. A very large wholesale trade was done until the embargo on imported plants came into force. Laterly, Mr. Baldwin has turned his attention to raising Cattleyas and Læliocattleyas from seed. With the assistance of Mr. Harry Gray, one of the "Oakwood" pupils, this department looked very flourishing, and large quantities of the useful cut-flower types were being pushed on. Unfortunately, just prior to my visit, a disastrous fire occurred, and a seedling house, measuring 80ft. x 10ft., was burnt out with a large portion of the contents, amounting to approximately 12,000 small plants. But with the proverbial Yorkshire grit, for Mr. Baldwin came from Heaton, Yorks., and had his early training with Charlesworth & Co., immediate steps were undertaken to repair the damage. Much of the early work had to be gone through again. However, I noticed many new seed-beds bristling with multitudes of little plants.

In the large house, measuring 125ft. x 50ft., I again saw fine batches of Cattleya species. This house contains nearly 20,000 plants, including C. Mossiæ, C. Gaskelliana, C. Mendelii, C. Lueddemanniana, and a magnificent lot of C. Warscewiczii, the latter just pushing their flower spikes at the time of my visit. Suspended from the roof were about 3,000 plants of Oncidium splendidum. Another house, measuring 150ft. x 30ft., and arranged in 3 divisions, contains mostly hybrids, such as Læliocattleyas and Brassocattleyas, many of which had flowered. I must

mention a handsome batch of 300 plants of Cattleya Hardyana alba, for many of them had double leads. Most of the back bulbs had been removed this spring, leaving only four bulbs to carry on the good work.

In one division a large number of the most popular Cypripediums were noted, including insigne Sanderæ and insigne Harefield Hall; the long-stemmed varieties predominate. There were also in this house a nice lot of Phalænopsis amabilis and P. Schilleriana, all growing vigorously and many in spike. The Odontoglossum house is also composed of three divisions, and in a low, lean-to structure Odontoglossums and Odontiodas are doing their best to maintain Mr. Baldwin's name as a cultivator.

I was much impressed with the order and cleanliness of this establishment, as well as by the many modern labour-saving devices here used. All watering is done with a hose, supplied by a large tank that gives sufficient force for three men to work simultaneously. I had a warm welcome from my old friend, and many were the enquiries as to the condition of things generally in England to-day. I assured him that the good work is being continued in spite of the many difficulties at home and abroad. A.G.E.

(*To be Continued.*)

MR. JAMES O'BRIEN, V.M.H.

AT the meeting of the Royal Horticultural Society's Orchid Committee on January 15th, Sir Jeremiah Colman referred in well-chosen words to some of the high characters possessed by Mr. James O'Brien, who had filled the post of secretary to the Committee ever since its formation in 1889, and was now retiring. In order to mark their appreciation of Mr. O'Brien's long and excellent service, the members presented him with an inscribed and framed address and a cheque for £130, in addition to which the R.H.S. Council have contributed £20, bringing the total to £150.

Upon receiving this gift from the hands of the Chairman, Sir Jeremiah Colman, Mr. O'Brien expressed his sincerest thanks to the members of the Committee, and remarked that he would always endeavour, so far as the advanced years of his life permitted, to assist the Committee in whatever way he could. He also alluded to a few of the memorable occasions of his long life, including the work of the R.H.S. at Kensington, and to several of the important Orchidists of the past.

Almost all the members of the Committee were present, and the R.H.S. Council was represented by Mr. W. A. Bilney, Mr. E. A. Bowles, and Mr. W. R. Dykes. We append a copy of the address, as well as some personal tributes from those who were unable to be present.

Mr. Gurney Wilson, who has completed 25 years as a member of the Royal Horticultural Society, has been appointed as Mr. O'Brien's successor.

To Mr. James O'Brien, V.M.H.

We, members of the Orchid Committee of the Royal Horticultural Society, offer you our sincere good wishes on the occasion of your regretted retirement from the Secretaryship of our Committee, which you have held continuously for a period of thirty-four years, since its foundation in 1889.

We wish to record our appreciation of your zealous and signal services in the interests of the history, study, and science of Orchidology, and of horticulture generally. Your unfailing courtesy and ready assistance have won our affectionate regard.

We ask your acceptance of the accompanying gift, and pray that you may long be spared in health and happiness, and that you may frequently attend our meetings.

January, 1924.

Sir Jeremiah Colman, Bart., D.L., V.M.H., Chairman.
Lt.-Col. Sir George Holford, K.C.V.O., C.I.E. } Vice-Chairmen.
Sir Harry James Veitch, V.M.H. }
Gurney Wilson, F.L.S., Secretary.

The Council of the Royal Horticultural Society

H. G. Alexander	C. J. Lucas
Thomas Armstrong	A. McBean
E. R. Ashton	Hon. Henry D. McLaren
R. Brooman-White	Sir Frederick W. Moore, V.M.H.
Clive Cookson	G. F. Moore
John C. Cowan	H. T. Pitt
Chas. H. Curtis	J. Wilson Potter
John Cypher, V.M.H.	Pantia Ralli
Arthur Dye	Fred. K. Sander
S. W. Flory	J. E. Shill
Frederick J. Hanbury, F.L.S.	Henry H. Smith
W. H. Hatcher.	Baron Bruno Schröder.
W. J. Kaye	Richard G. Thwaites
Stuart H. Lowe	W. H. White

Personal Tributes.

Lieut.-Col. Sir George Holford, K.C.V.O., C.I.E.:—

"Nobody has worked harder in the interests of the Orchid world than Mr. O'Brien has for the last 50 years and more. Even in his retirement his unrivalled knowledge of Orchids, and everything to do with them, will continue to be of the greatest value as long as he lives, and I trust that we shall still see our old friend amongst us for many years to come."

Sir Harry J. Veitch, V.M.H., F.L.S.:—

"Mr. O'Brien is a man for whom I have always had the greatest regard, and I am glad of the opportunity of joining in such a presentation. In this instance it is, in my opinion, thoroughly well deserved."

Sir Frederick W. Moore, M.A., V.M.H.:—

"The amount of my contribution in no way represents my admiration for the valuable work done by Mr. O'Brien or my esteem for him personally. I have known James O'Brien since 1877, nearly half a century, and I have every reason to be grateful to him for the kindly and generous help he so freely gave me in getting together the collection of Orchids at Glasnevin, and for his invaluable advice I am grateful."

Mr. Clive Cookson, Newcastle:—

"I have great admiration for this fine old man, who has done such an immense lot for so many years towards popularising and improving the hobby of which we are all so fond. His work has, I believe, done as much as anybody's towards bringing Orchids to their present state of perfection and in keeping us upon the right lines. I regret more than I can say not being able to be present when this well-deserved and most interesting presentation takes place."

Mr. W. H. White, formerly Orchid grower to Sir Trevor Lawrence, Bart.:—

"I have known Mr. O'Brien as a friend for many years, and can well remember him at the old South Kensington meetings, and also at the famous Regent Park shows. When I was with Sir Trevor we had many conversations regarding imported Orchids, and I always found him a jolly good friend in many ways. I am very pleased indeed that such a fine and substantial presentation is to be made, which he undoubtedly well deserves. I wish him every happiness as long as he may live."

EARLY-DAY ORCHID CULTIVATION.

IT is always a matter of interest to look back a few decades and to compare the present with the past. Some plants that at one time were commonly grown have now passed out of cultivation, while methods of treatment have altered in agreement with the changes that have taken place in greenhouse construction and the means by which suitable temperatures are maintained.

Nearly forty years ago, Mr. James O'Brien compiled some notes regarding Orchid cultivation as it was carried on forty years previously, which carries us back to about 1845. Among the specimens then exhibited were Aërides odoratum, with 16 leading growths and between 30 and 40 flower spikes; Lælia crispa, with over 20 spikes; Saccolabium præmorsum, covered with bloom, Epidendrum bicornutum, with many spikes; Oncidium ampliatum majus, with numerous spikes forming a head of golden flowers over four feet across; and Odontoglossum grande, all from the collection of Mrs. Lawrence, of Ealing Park. Calanthe veratrifolia, with 18 spikes, came from the collection of J. H. Schröder, Esq., of Stamford

Green ; Saccolabium guttatum, with a similar number of spikes, was shown by J. J. Blandy, Esq.; and Aërides odoratum, with nearly 30 spikes, by R. S. Holford, Esq. Cattleya labiata was seen in a robust plant bearing 16 flowers exhibited by Robert Hanbury, Esq.

Other plants described as being very fine in different places eighty years ago were Renanthera coccinea, with seven panicles, each bearing from 100 to 110 flowers, in the collection of A. Palmer, Esq., at Cheam; and an equally good one in the possession of R. S. Holford, Esq., which bore on one of the panicles no less than 117 of its scarlet flowers. Good specimens are also mentioned of the yellow Calanthe curculigoides from the Straits of Malacca; Angræcum bilobum, with a dozen long flower spikes; the rose-coloured Eulophia guineensis; and Lælia superbiens, with nine heads of bloom, in the garden of the Horticultural Society.

Forty years ago Mr. James O'Brien prepared the following information in readiness for the Orchid Conference held at South Kensington, May, 1885. Orchids, from the time of the earliest arrivals, have always been appreciated, and as early as 1800, when the lovely Aerides odoratum and many other showy things were introduced, their habits and culture seem to have been understood fairly well, but the bad construction of the houses and their defective heating by means of flues and other contrivances militated sadly against the culture of the small growers and the varieties requiring cool treatment. Hence, while many continued the culture of the more robust kinds, and attracted visitors from distant parts to see them when in bloom, no general progress was made until the period between 1835 and 1850, which was perhaps the richest in importations of fine handsome Orchids.

During that period the fine discoveries of Messrs. Veitch's collectors with Aerides, Saccolabiums, and Vandas ; Griffiths, with his Cymbidiums and Dendrobiums; Skinner, Barker, and Hartweg, in Mexico, Guatemala, and along the Andes; and other collectors, made quite a revival among the Orchid growers, and the result of new energy being put into the matter was that with some of the showier Orchids such perfection was attained that we could not even now match some of the specimens mentioned as being exhibited at the Horticultural Society's Shows held at Chiswick, where in those days a good collection of Orchids was to be found.

Mr. O'Brien also remarked at the Conference that the love for Orchids, which existed from the time the first plants came into the country, had steadily increased, and that their widely-diffused culture, far from being a modern fashion in flowers, was but the result of the steady progress of that which always existed, and always will exist, as long as that love for flowers, which is one of the chief characteristics of the inhabitants of these isles, remains. He could never see that there was any difficulty in growing the

greater part of our handsome Orchids, provided the one who took them in hand had a real liking for them, and a determination to use his own eyes and his best judgment for their benefit. In such a case success follows invariably, for Orchids, like the domestic animals, soon find out when there is one who is fond of them, and they seem to be happy and to thrive and establish an understanding with such a guardian, indicating their wants in many important matters as plainly as though they could speak.

It is this kind of understanding, he continued, that should be aimed at, as it goes a great way towards securing success, as well as giving pleasure to the pursuit. It is the existence or the want of this kind of relation between the plants and their master, which makes all the difference between a good grower and a bad one—between a healthy collection and a shabby one. Be sure that without someone takes an unfeigned and steady interest in the plants, they will not thrive, but if one can be found to be watchful over their interests, and apply what knowledge he can get by what he sees or reads of in other collections, a good measure of success is sure. Hence, some of our smaller amateurs, by their diligence and real liking for their plants, often grow things to perfection which have puzzled more scientific men.

CYPRIPEDIUM NITENS.—A large water-colour drawing bearing the title Cypripedium insigne recently attracted our attention because the flowers differed much from the recognised type of this species, in fact, they showed strong evidence of C. villosum. As the plant was said to have been imported from India, the matter was looked up and it was found that a natural hybrid between insigne and villosum has on more than one occasion been recorded, and is now recognised as C. nitens. Some years ago Messrs. Sanders supplied the following information: "C. insigne seems to be distributed over a very wide area. We get it from Assam and Burma, and from many stations in the former province, especially the Khasia Hills. We get villosum from Burma, not from Assam, and the form previously thought to be new came from quite a new locality in Burma. We think it quite possible that insigne and villosum do grow together, and we should not like to say that natural hybrids do not exist between them. During one year we had from the same collector C. villosum, insigne, Spicerianum, and hirsutissimum all in the same box, which is apparently conclusive evidence that these kinds grow, if not with, at least comparatively near each other. There is always great difficulty in getting to know the exact locality of the different plants. Our collectors, of course, employ native labour, and many of these natives go a long distance for plants." As importations are now seldom received, the evidence regarding natural hybrids is less frequently met with, but the subject remains just as interesting.

LÆLIOCATTLEYA MARTINETII VAR. THE PRINCE.

LÆLIOCATTLEYA MARTINETII.—This richly-coloured hybrid between L. tenebrosa and C. Mossiæ was originally recorded in 1899, since when it has been frequently seen in the large groups staged at the principal exhibitions. It is always a favourite with amateurs and many distinct varieties have been flowered. Our illustration is of the variety called The Prince, in which the flowers are of bronze colour shaded with varying tints of orange-red, the labellum being purplish. This particular plant was cultivated in the collection of Lieut.-Col. Sir George Holford, K.C.V.O., by Mr. H. G. Alexander.

ORCHIDS AT TUNBRIDGE WELLS.

THE name "Orchidhurst" is so familiar to our readers that it seems hardly necessary to point out that it denotes Messrs. Armstrong & Brown's establishment at Tunbridge Wells. The first glass-house was built about the year 1900, since when additions have been made almost annually, until, at the present time, thirteen large houses, as well as the corridor, are completely filled with Orchids. The whole establishment is methodically arranged, the various offices, store-rooms, potting and packing sheds being so constructed that visitors, as well as plants, are at all times protected from the outside weather conditions.

The corridor, connecting the various houses, runs from east to west, and is over 300 feet in length. Its height is sufficient to allow of plants being suspended from the roof without in any way interfering with visitors. No less tban 2,000 Dendrobiums, in flowering-size plants, and some other genera, are thus cultivated. The airy condition of this corridor in the autumn renders it well-adapted for ripening up bulbs, especially those o shy-flowering Cattleyas and Brassavola hybrids. On narrow side-staging a number of shade-loving Orchids are grown, including many Cypripediums, and a few Cœlogynes.

The first house entered is known as the seedling house. Although but 10ft. 6in. wide, it contains 12 rows of 4in. pipes for maintaining the necessary temperature. Tens of thousands of little seedlings are here to be seen, the smallest still in the seed-pans, the larger ones in small pots filled with soft fibre and moss. The atmosphere is almost at saturation point, and the moisture is continually condensing on the glass roof, whence it runs along the sash-bars, all of which are provided with a narrow channel, and ultimately trickles down the brick wall on each side of the house. Thus the same water is continually being vaporised and condensed. As practically no ventilation is given there is no loss of moisture, and the house does not often require damping down. Cattleya and Brassavola hybrids are the principal occupants.

Choice Cypripedium hybrids occupy the second house. These are all in the young stage, but with an unusually strong habit of growth, the broad foliage clearly denoting that the treatment given is entirely to their liking. The compost used is made up of the short fibre left over from potting large plants, clean loam and sphagnum moss. Some larger plants of Cypripedium Maudiæ are growing well in a mixture of only fibre and moss, and judging by the healthy state of the several hundred examples of this popular hybrid, there does not seem to be any need for loam. Other well-known Cypripediums here grown are Curtisii Sanderæ, in flower when these notes were taken last month, Holdenii, Lawrenceanum Hyeanum, and the

beautiful Enchantress (Curtisii Sanderæ × Alma Gevaert), Cypripedium bellatulum, concolor and niveum are potted in a mixture of loam and small crocks.

Mr. Armstrong endeavours to maintain this establishment as fully representative of the large Orchid family, and no matter in what particular section an amateur may be interested he is sure to find something worthy of close examination. Cirrhopetalums are represented best by pulchrum, the lovely Fascinator, from Annam, gracillimum, with reddish-purple flowers, and Medusæ, with its shaggy head of flowers. Bulbophyllums include the elegant Ericssoni, galbinum, and Godseffianum. The allied genus Megaclinium is also represented, and attracts attention on account of the small flowers being arranged on both sides of a flattened rachis. Madagascan Orchids include the elegant Angræcum sesquipedale, while a flowering plant of A. Sanderianum is extremely pretty. Aerides Vandarum and Rhynchostylis retusa are among the Indian species, and both seem at home in the atmosphere of this house. Microstylis Scottii, from Penang, has pretty foliage, and bears small yellowish flowers during the summer months.

Another long span-roofed house has recently been gay with numerous Cypripediums of high order, among them being Olympus, with the dorsal sepal almost wholly white, and perpetuating in a marked degree the species Spicerianum, contained in the parentage. Another, known as The Prince, is similar in formation to the well-known insigne Harefield Hall, but is larger. Cyp. Doris Stanton of rich purple colour is somewhat lacking in shape. One of the best of Cypripedium hybrids exists in Mrs. W. H. Page, while a distinct one of large size is to be seen in Ernest Read. There are also robust plants of Cyp. F. M. Ogilvie var. The King, which is considered by many admirers of this genus to be one of the most beautiful of its kind. The Orchidhurst variety of Arthurianum bears large flowers displaying the marked characters of Fairrieanum. Cyp. Matilda (Cambridgeanum × Fairrieanum) is a very remarkable hybrid in which the flowers appear to have been dipped in port-wine, so rich is the purplish colour on both sides of the dorsal sepal and petals.

Above the pathway, in each of the houses, about 500 seedlings are suspended close to the glass. As the top ventilators are very small, and only used when the outside conditions are warm, there is no fear of these plants being subjected to draughts of cold air. Watering is attended to about twice a week, but daily syringing is done whenever desirable. All these little plants, each in a separate pot, are in excellent condition and make bulbs rapidly. When about three years old they are removed to the staging beneath, their place being taken by smaller plants recently potted up from the store pans.

Although Læliocattleya Schrœderæ possesses a vigorous constitution and yields unusually large flowers, it makes an uncertain mother plant, and only on rare occasions can a good seed-pod be obtained. However, Mr. Armstrong has raised a fine batch of seedlings between Lc. Schrœderæ and C. Maggie Raphael, and much hope is attached to them, as both parents are noted for their fine creamy-white sepals and petals and richly-coloured labellum. At one end of this house are several healthy plants of the little Lælia rubescens, a Mexican species now rarely seen, while close by is a strong flowering plant of Broughtonia sanguinea, a native of Jamaica, and Leptotes bicolor, from Brazil. These last three-mentioned species are here cultivated under conditions that are more shady than those usually adopted, and results are certainly encouraging enough for the treatment to be continued.

Dendrobiums include a robust plant of the very rare Ashworthiæ, the elegant Harveyanum, of golden colour and having the petals fringed in similar style to the labellum, several examples of signatum, noted for its yellow-coloured flowers, and a series of signatum hybrids, of which Thwaitesiæ is one of the best. Dendrobiums of the nobile section are to be seen in hundreds, and many superb hybrids and varieties are amongst them. One of the finest exists in D. Lady Colman, which received a First-class Certificate, R.H.S., Feb. 10th, 1914. This genus is certainly regaining its former popularity, and in anticipation of the future demand a large part of one of the houses is devoted to some thousands of seedlings, now about four years old. In another house there are strong plants of D. Dalhousieanum aureum, and the pretty D. Victoria Reginæ, with flowers of slate-blue colour.

That several Cœlogynes are well worthy of cultivation is recognised by Messrs. Armstrong & Brown, for they cultivate with much success the handsome C. pandurata, the erect and white flowering C. Mooreana, as well as C. barbata, which here makes bulbs of an unusually large size. The hybrid between asperata and pandurata, known as burfordiensis, is in a vigorous condition. A good old favourite genus is Lycaste, and here its representatives include the handsome Skinneri, with its variety alba, cruenta, aromatica, and Balliæ.

The Odontoglossnm house reserved for choice hybrids is full of interest. It contains the wonderful Od. Armstrongii, to which a First-class Certificate was given when exhibited at the Royal Horticultural Society, Oct. 18th, 1921. A reference to the illustration of it in our issue for December, 1921, will recall its extraordinary character. Od. Armstrongii var. Aureola came from the same parents, the segments in this being almost entirely yellow. It received a First-class Certificate, R.H.S., Nov. 28th, 1922, and a Certificate of Appreciation for quite a new race of Odontoglossums. Other

notable plants are Od. crispo-Solon var. Carminetta, F.C.C., R.H.S., and the well-known Od. crispum solum. Od. Victory var. Supreme, F.C.C., R.H.S., is one of the finest of the blotched kinds, while Od. L'Empereur, of a peculiar blue tinge, came from the fine collection of the late Mr. W. R. Lee. Od. Conqueror carried a grand spike of 13 flowers at the time of taking these notes, and there were several pleasing examples in flower of Od. crispum xanthotes, Od. c. virginale, and Od. promerens xanthotes.

The Odontoglossum houses are each 12ft. in width, and contain eight rows of 4in. pipes, so it is rarely necessary to have these in more than a warm state, hence the atmosphere does not become hot and dry. The plants respond well to the treatment, and everywhere one notices superb examples of cultivation. There is no second, or under, staging in these houses, consequently the plants always obtain abundance of fresh air, which finds its way through the bottom ventilators, and in summer time keeps the plants cool. Odontiodas are cultivated under similar conditions, and they all look uncommonly well. The whole of one side of a long house is occupied by various kinds. Oda. Henryi still holds its own, and for general purposes cannot be surpassed. An example in a four-inch pot carried a spike of 24 flowers in the month of January. Oda. Madeline varies much in colour, a pleasing form being seen in a bright orange-coloured flower.

Cattleyas occupy considerable space. Among the species, mention may be made of C. Warscewiczii var. F. M. Lambeau, a pure-white form to which a Gold Medal was awarded by the Royal Horticultural Society. C. Trianæ var. The Baron and C. Trianæ var. The Premier are both wonderful plants, while C. Trianæ Broadlands variety is noted for its free flowering habit. The wide central staging in this house is occupied by many superb plants of Læliocattleya Schrœderæ, and a large number of Cattleya Maggie Raphael alba, the latter producing an abundance of bloom in mid-winter. Cattleya Iris (bicolor × aurea), like many of the long-bulbed plants, generally fails to grow well after a few seasons of flowering, but here it succeeds splendidly, and, after 16 years of cultivation and regular flowering, last year's bulbs are even larger than any of those made in the past.

Læliocattleya Honoria (C. Mantinii × Lc. Geo. Woodhams) is another grand hybrid possessing a robust constitution. There are also scores of other attractive hybrids, including such popular ones as C. Fabia and C. Hardyana. One half of the side stage in this house is occupied by a fine batch of C. Hardyana alba. A large plant of the old Lælia purpurata reminds one of former days. One of the most useful of Læliocattleyas is here cultivated in Lc. Ilene (Lc. Dominiana × C. Bowringiana), of robust habit, and producing many-flowered spikes of rich purple colour. A flowering plant of Brassavola Digbyana brings us to the many beautiful

hybrids of which it has been a parent. The very rare and wonderful Brassolæliocattleya Lady Manningham Buller, which received a First-class Certificate and Silver-gilt Lindley Medal at the Royal Horticultural Society, is represented by two grand plants, and is considered the finest pure-yellow Brassavola hybrid yet seen. Brassolæliocattleya The Baroness, F.C.C., R.H.S., will always be remembered as another of the finest of the yellow flowering section, and one is therefore not surprised to find that the cross has been made again, and a nice batch of seedlings raised. It remains to be seen whether a still finer hybrid as regards yellow colour will be produced. Another excellent hybrid is seen in a batch of Blc. Truffautiana, produced by crossing Bc. Mrs. J. Leemann with Lc. luminosa. Among the Sophronitis hybrids some good results have been raised in Slc. Royalist (Sc. Atreus × Lc. Geo. Woodhams), which quickly makes plants with several leads and yields flowers of a beautiful range of colour. Cattleya Skinneri, Temple's variety, of which several fine specimens are cultivated, is not only a stronger grower than the type, but yields flowers of a much darker colour. Cattleya Astromary is a pretty novelty produced by crossing C. Queen Mary with C. Astron, the flowers being white, some with a blush tint on the lip.

Cymbidiums are now very popular, which is accounted for by the ease with which they can be grown and the highly decorative nature of their flowers. A beautiful novelty has flowered this year in C. Ivory Wings (Gottianum × Woodhamsianum), ivory-white and with a few reddish spots on the border of the labellum. Other Cymbidiums that stand out meritoriously are Pauwelsii, of which a variety is here to be seen with the lip unusually well marked with crimson; Alexanderi, in many forms; International, A.M., R.H.S., always pleasing; and strong plants of insigne, this being the species that has led to the making of so many excellent hybrids. Growing under almost similar conditions to the Cymbidiums are numerous Masdevallias, including the white-flowering tovarensis, the handsome Schrœderiana, the yellow flowering Davisii, and Bonplandii. Restrepias and other botanical Orchids are also cultivated with considerable success. A fine effect is produced by strong spikes of Zygopetalum Armstrongiæ (Mackayi × rostratum), the bright violet-purple of the labellum showing up well. All round the front part of the staging in this house can be seen hundreds of back bulbs of Odontoglossums, many of which break forth into fresh activity and thus increase the stock of desirable varieties. A section of this house is devoted to seedling Cymbidiums, and of these the most interesting is undoubtedly a batch of C. insigne album, the result of fertilising a flower of this rarity with its own pollen. Although the plants are hardly large enough to flower, there seems no question as to their albino nature, for the foliage is of a light greenish-yellow tinge, and

quite different in this respect to that of other Cymbidiums. Selenipedium nitidissimum, raised as long ago as 1888, produces flowers in which the long-tailed petals are a great attraction to visitors.

In bringing these notes to a close, it is worth while mentioning that amateurs will learn much as to the construction of suitable houses for Orchid cultivation by paying a visit to this establishment, which is in every way modern in style and filled with an extensive stock of most interesting species and beautiful hybrids. Mr. Armstrong takes a special pleasure in demonstrating the practical part of Orchid cultivation, and willingly places his extensive knowledge at the disposal of amateurs.

R.H.S. ORCHID CLASSES FOR SMALL GROWERS.—I notice with much interest in the January issue, p. 2, Mr. L. Dixon's letter *re* Orchid classes for small growers at the R.H.S. meetings. I have often thought such a class, or classes, would be taken up with keen enthusiasm. As Mr. Dixon says, there must be hundreds of small Orchid growers—amateurs, who grow purely for the pleasure and recreation it gives them—who would delight in competing with one another in friendly rivalry and who would welcome the means afforded by such classes at the R.H.S. meetings to do so. I would, however, go further than Mr. Dixon: why limit the class to Cypripediums? Would not classes for Cymbidiums, Odontoglossums, and, in fact, all Orchids that can be grown by amateurs, command as much support as the Cypripediums? To expect small growers to exhibit flowers capable of standing against those grown by the wealthy enthusiasts who have every facility that wealth can command for growing the fine blooms one sees at the R.H.S. is manifestly unfair. I am not at all sure that small exhibits are welcomed at the meetings now. I may be wrong, but my impression is that they are not, from the traders' point of view—and these gentlemen preponderate on the Committee—they would at least stimulate business and would be all to the good of the object we have in view—the advancement of the culture of that most fascinating flower, the Orchid.—*A. Mondini Gentle, The Capstone, Church Crescent, St. Albans.*

"GARDEN DEVELOPMENT."—We are pleased to note that Mr. T. Geoffrey W. Henslow includes a chapter on Orchid growing in his new work, "Garden Development." He states that Orchids can be grown as easily as other greenhouse plants; that they are not the expensive plants people imagine; and that they are, without doubt, the most fascinating plants to grow, and give more pleasure than any other class of plants. This useful book, comprising 352 pages is rendered attractive by numerous illustrations, and published at 15s.

EPIPHYTIC ADAPTATIONS OF ORCHIDS.

AT the meeting of The Orchid Club held at the Houldsworth Hall, Manchester, January 11th, Professor F. E. Weiss, F.R.S., gave a short account of the various epiphytic adaptations of Orchids, discussing the chief morphological changes which have enabled primitively terrestrial plants to assume the epiphytic habit.

Assuming that the earliest Orchids were of terrestrial habit, Prof. Weiss stated that the epiphytic forms probably arose from them through the tendency of growing upwards towards the light. As they gradually departed from the moisture and fertile soil of the forest ground, and thus became exposed to more airy and lighter conditions, various changes took place in their cellular construction.

On becoming aerial plants, the roots underwent a peculiar modification, and a parchment-like covering, called the velamen, was formed around them. This enveloping structure was something of the nature of blotting paper and quickly absorbed water. When the velamen is charged with water, the greenish colour of the interior root becomes visible, and a greenish hue is given to the whole, but when the velamen is dry, and its cells are filled with air, the interior root is invisible, and a whitish appearance prevails. Although the velamen has great powers of absorbing atmospheric moisture and passing it on to the actual root in the centre, a process carried on by means of passage cells, it also possesses the power of preventing water once obtained by the plant from being evaporated.

Although epiphytic Orchids in their native homes are generally found growing securely attached to trees, they in no way obtain their food supply from that possessed by the host. Epiphytes obtain their food from the decaying humus that accumulates in the forks of the trunks and among the branches. This organic matter is also washed down by rain from higher portions of the tree. The exact means by which epiphytic Orchids obtain their supply of mineral matter is not fully understood, but it seems probable that dust accumulating on the tree during the dry period is subsequently brought down into contact with the Orchid by means of heavy dews or rain.

The cuticle of the leaf was also explained, the lecturer pointing out how it becomes thickened when drier conditions necessitate protection. Plants have the power of acclimatising themselves to alterations of the atmospheric conditions, and so long as these changes take place gradually no harm occurs. Should, however, any sudden change take place, such as through moving a plant from shady and moist conditions to those of a much brighter and drier style, then the delicate cellular structure will most probably be damaged.

DENDROCHILUM GLUMACEUM VALIDUM.

THE strong constitution and free-flowering nature of Dendrochilum glumaceum has made it a favourite with many amateurs. It is a native of the Philippine Islands, and was discovered by Cuming, who sent a plant to Loddiges' nursery, where the flowers were first seen in 1841. The variety validum has leaves twice as broad as the ordinary form, although the flowers do not appear to be different. No precise date to this varietal form can be traced. It is said to have first appeared with M. A. A. Peeters,

DENDROCHILUM GLUMACEUM VAR. VALIDUM.

of Brussels, and soon after at the Glasnevin Botanic Gardens, but the plant here illustrated probably represents an even earlier example, judging by the period in which it was cultivated in the collection of the late Mr. O. O. Wrigley, of Bridge Hall, Bury. Warm house treatment is necessary, and the plants should be repotted in a fibrous compost when new growth commences, usually just after the flowering season is passed. The foliage is rather liable to be attacked by thrip, hence periodical examination and washing are advisable.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Chassaingiana ...	Bc. Thorntonii × C. Percivaliana	M. Chassaing.
Brassocattleya Dolphin	C. Lueddemanniana × Bc. Thorntonii ...	Stuart Low.
Brassocattleya Perfecta	Bc. Digbyano-Mossiæ × C. Maggie Raphael	„ „
Brassocattleya Leila	C. amabilis × Bc. Digbyano-Mossiæ ...	Pauwels.
Brassocattleya Trimabilis	Bc. Vilmoriniana × C. Trianæ	„
Brassolælia Wengen	Bl. Digbyano-purpurata × L. Latona ...	Stuart Low.
Brassolæliocattleya Crescent ...	Bc. Digbyano-Schrœderæ × L. Ceres ...	„ „
Brassolæliocattleya Elaine	Bl. Jessopii × C. Dowiana aurea	„ „
Brassolæliocattleya Evadne ...	Lc. Martinetii × Bl. Digbyano-purpurata	„ „
Brassolæliocattleya Miranda ...	Bl. Helen × C. Lueddemanniana ...	„ „
Brassolæliocattleya Medea	Blc. Veitchii × Lc. Dominiana	„ „
Cattleya Astromary	Astron × Queen Mary	Armstrong & Brown.
Cattleya Birucha	Mrs. Pitt × Iris	auwels.
Cattleya Doreen	General Pau × Maggie Raphael	Stuart Low.
Cattleya Fraser	Octave Doin × Carmen	„ „
Cattleya Leveriana	Comet × Lueddemanniana	M. Chassaing.
Cattleya Minaret	Lueddemanniana × Fabia	Stuart Low.
Cattleya Mount Royal	Maggie Raphael × Enid	„ „
Cattleya Orietta	Maggie Raphael × Fabia	Pauwels.
Cattleya Pauline	Lord Rothschild × Dupreana	Stuart Low
Cattleya Percivenus	Percivaliana × R. Prowe	Pauwels.
Cattleya Tambora	intertexta × R. Prowe	„
Cattleya Woltersiana	Queen Mary × Rajah	„
Cymbidium Ivory Wings	Gottianum × Woodhamsianum	Armstrong & Brown.
Cypripedium Cyclopian	Cyclops × Leeanum	Sanders.
Cypripedium Luna	Desdemona × Mrs. Cary Batten	Armstrong & Brown.
Cypripedium Luptonii	Earl of Tankerville × Antinous	Sir J. Rutherford.
Cypripedium Peter Pan	Alcibiades × Peter	S. Gratrix.
Cypripedium Pilatus	Hera × Curtmannii	Stuart Low.
Cypripedium Rosalind	Niobe × Reginald Young	Sanders.
Cypripedium Queen Maud	Queen Alexandra × Charlesworthii ...	S. Gratrix.
Læliocattleya Beacon	luminosa × G. S. Ball	Stuart Low.
Læliocattleya Cavalese	C. Fabia × Lc. Lustre	„ „
Læliocattleya Delise	luminosa × Aphrodite	„ „
Læliocattleya Hiram	eximia × St. Gothard	Pauwels.
Læliocattteya Ian	C. Octave Doin × Lc. Flammea	Stuart Low.
Læliocattleya Kobe	C. Mendelii × Lc. Teucra	„ „
Læliocattleya Lucirea	Lc. Lucia × C. Dowiana aurea	Pauwels.
Læliocattleya Pioneer	Lc. Schulzeana × C. Trianæ	Stuart Low.
Læliocattleya Pordoi	C. Fabia × Lc. Dr. R. Schiffmann ...	„ „
Læliocattleya Riva	Lc. eximia × C. labiata	„ „
Læliocattleya Russet	luminosa × Coronis	„ „
Læliocattleya Scythia	Lc. Lucasiana × C. Mendelii	„ „
Læliocattleya Troilus	C. Rex × Lc. Canhamiana	Sanders.
Miltonioda Hilda	M. Rœzlii × C Nœzliana	McBean.
Odontoglossum Conquest	Amethyst × ardentissimum	„
Rolfeara Charm	Bc. Mrs. J. Leemann × Sc. Thwaitesii ...	Sanders.
Sophrolæliocattleya Apache ...	Slc. Laconia × Sc. Nemea	Stuart Low
Sophrolæliocattleya Rosemary ...	Lc. luminosa × Sc. Blackii	„ „

COLOUR RECORDING.—In order that the various colours of Certificated Orchids may be correctly recorded, the Orchid Club has decided to adopt the colour scheme known as "Code de Coleurs, Klincksieck et Valette, Paris."

CULTURAL NOTES.

THE following cultural notes have been selected from back volumes of the *Orchid Review* :—

COCKROACHES.—A friend of mine who professes great prowess in the art of trapping cockroaches, recently told me of the following method: A pound of treacle and a pint of beer are mixed together, and a quantity of the mixture poured into ordinary jam jars, which are distributed over the floor of the house and tilted against the supports of the staging. The insects are attracted by the smell, and venturing in, are unable to find their way out again. A means of destroying them once they are caught will suggest itself to readers. This pest is most rampant in the Warm houses, and is very fond of succulent spikes and flowers. Phosphorus paste on crocks, or on bits of cabbage leaves, is a well-known means of destroying them, and there are other preparations advertised which can be tried in turn, as the cockroach soon begins to know a poison continuously used. Poisons should be removed in the morning and replaced at night.—*J. M. Black, January*, 1906.

PHALÆNOPSIS.—These lovely winter-blooming Orchids are now practically over for the season, and will enjoy a little rest of about a month or six weeks' duration before commencing to grow again. They should therefore receive very little water, though sufficient to support the large, fleshy leaves, which should remain perfectly plump and healthy. The great thing with this genus is to retain the leaves for the longest possible period, for they are the main strength of the plant. It is better never to risk too much disturbance of the roots for purposes of re-potting, or a collapse is more likely than not to follow. Teak-wood baskets or cylinders are the best, and when a larger one is required, insert the whole bodily into it. This saves a lot of root multilation which would assuredly happen if an attempt was made to separate the roots from their grasp of the teak bars. Teak is splendid wood for this purpose, as it may be thus buried and still remain sound and sweet for a very long time. I believe it is never known to form fungoid growth. After so inserting one basket in the other, fill up the odd spaces with clean crocks or charcoal, and a little sphagnum moss here and there, which will keep the whole firm and assist to retain moisture. These plants are peculiarly adapted for basket culture, as the roots love to ramble, and soon leave the basket and strike out in the air, usually taking a downward direction, as though in search of moisture; and, of course, they do derive much nourishment from the atmosphere. Such roots during the growing season should be freely moistened when syringing with tepid water, and if at any time they should grow too long, so as to be in the way, or be in danger of getting broken, they should be carefully lifted up and coiled round the

teak bars once again, to which they will soon become attached. Those not requiring larger receptacles may now have the old sphagnum moss removed and new supplied, being careful not to injure the roots.—*H. A. Burberry, February*, 1900.

DENDROBIUMS.—The beautiful family of Dendrobiums are now coming on quickly, and these will for some time to come make a great display. Where good growth was obtained last year, and afterwards properly ripened, the flower buds will now be in a more or less advanced stage. On no account force them forward too quickly, as the majority of late winter and spring-flowering varieties develop much better and finer if brought along quietly, in a temperature of about 60°, giving just enough water at the roots and in the atmosphere to keep the pseudobulbs plump. With Dendrobes it is as yet a little early to do very much re-potting, but there are some cases where a start can be made, so that as many as possible may be got off hand. The seedlings which are yet too small to flower may be done, and gently started into growth. Then again there may be others which are not intended to flower, because they are not strong enough, and these should have attention, whilst the remainder will require to be taken in hand as soon as deemed safe after the flowering period is over. With newly-potted plants the watering should be done with great care until the new growth gets well up, and the new roots take a good hold of the new compost. Let the temperature be warm and genial, say between 60° and 70°, so that healthy and sturdy growth may be encouraged. Dendrobiums in general do best suspended in either small pans or baskets, as good results are more certain when kept to small receptacles. A suitable compost may consist of equal part peat, leaf soil, and sphagnum moss. The old back pseudobulbs are of little service after the third and fourth year, and may be readily detached from the plant. These old bulbs will mostly propagate freely if cut in lengths of about three inches, and laid on fresh sphagnum moss, and kept moist. The small plants resulting will, in about two years, be sufficiently large to again replace the old plants, thus keeping up a good supply of nice healthy young stock.—*J. Mackay, February*, 1904.

SHADING.—There is no doubt but that the wooden lath roller blinds are the best, and though the initial cost is more they are in the end the cheapest, because of their greater durability. But they must be well painted or oiled when new. It is the galvanised clips that give way first, and if a clip of a non-rustable nature, strong enough and cheap enough, could be used instead of these, the weak point in this most excellent shading would be overcome. The fixing of these blinds is a matter of some consideration, and one which will permit of a great amount of discussion. On houses of great dimensions six inches from the glass would seem a reasonable distance to fix them, but on small houses having the plants standing

well up to the glass, a foot away would not be too much. Again, where coolness as well as shade is a desideratum, even higher than a foot is to be recommended. A blind—whether of tiffany, wood, or bamboo—if allowed to lie on the glass, gives shade and prevents scorching, but the glass is kept very hot, and this is most enervating to the plants, especially if they are standing close to it. I have had some experience of tiffany lying on the glass and over the top ventilators, which are practically useless in consequence, as no air can get in or out through the cloth. When the sun is shining during the summer months on a house as described, the air inside smells more like that in a super-heated mushroom-pit than anything else. For shade-loving, pseudobulbless plants, such as Phalænopsis, Angræcums, Aërides, many Vandas and Cypripediums, the tiffany blind may be recommended, as, while giving light, the direct rays of the sun never touch the leaves. But it is in the spring that shading gives the Orchid grower the most care. Imagine a beautiful, clear, sunny day, and a keen, cutting, east wind. The sun is just a little too bright to be safe, so down must come the blinds, and with them the temperatures in the houses, which must then be maintained by artificial means. We shut out the light and natural heat so much to be desired, and resort to fire-heat so much to be condemned. For this absurd state of affairs there is no practical solution, for a series of blinds of different thicknesses is quite impracticable. and therefore out of the question. The question of shading is a most important one to the Orchid grower, for good blinds sensibly adjusted will make the growing conditions of a house good, while carelessness in this respect will make them bad.—*J. M. Black, February,* 1906.

Show House.—I conscientiously recommend a house set apart for the better showing off of Orchids when in bloom. Many persons object to the term "show house," and perhaps do so for good reasons. Instances have come to my notice where the mention of a show house has been misconstrued, and thought to mean a greenhouse or conservatory, where other flowering plants were placed, and to which the flowering Orchids have been taken straight away, with the result that many species have suffered greatly. It is not to such places that I refer as being suitable for showing off Orchids, but to a house having an intermediate temperature, such as where ferns are grown ; the condition would then suit both the ferns and the flowers, being neither too dry nor too moist, and nicely shaded from the sun. I could point out no better place. No one who has not tried can imagine the lovely effect produced by the arrangement of flowering Orchids with Adiantum cuneatum, and other ferns, either by day or night. In fact, I think, when seen by the electric light, the colours of many species are even more charming than by daylight.—*H. A. Burberry, February,* 1894.

Treatment of Specimens.—The grower should remember that if a

good stock of plants and specimens is to be maintained in full vigour, some of the larger and crowded plants should each year be pulled to pieces, and given a fresh start. When a few are thus treated annually there are always some that only require potting-on to take the place of the ones broken off; in fact they should go in stages till they get to the top. When they become very overcrowded in the centre, even if it is possible to pot them on, the centre portions get little benefit from the new material, and they soon show a deterioration in the quality of the flowers, so that when it is desirable that the same plant should remain as a specimen, it should be carefully pulled to pieces and re-made, using the outer portions of the plant; the centre may thus be broken up into smaller pieces and potted into small pots for stock. In re-making a specimen, so place the pieces that they each have room for development centrewards as well as outwards, and then it will go for two or three years without disturbance, beyond an annual resurfacing. All plants that do not require repotting will be benefited by having the surface material removed and replaced with new. We surface with chopped sphagnum, and when this is used, resurfacing is very little trouble.

After potting, watering must be done very carefully indeed. With such plants as these, that are known to be very free and easy to cultivate, one is apt to think that such care is not necessary, but it is, especially for a month or two after they have been disturbed. I do not mean to say an extra watering when they do not need it is going to kill, but it is the highest point of culture that we should aim at, and to reach that end every detail must be considered from first to last. Frequent dampings between the pots will be helpful, and if the house is of a dry nature, a light spraying on bright days may be given, and as the days lengthen and become brighter overhead spraying may be done daily, slightly at first, increasing the amount as the season advances. The atmosphere of the house should always be a humid one. In dividing, there will be sure to be some pieces that have very little root, and these can be best treated if they are placed together, and kept well sprayed and shaded from direct sunshine. With such numerous fine varieties as we now have, they make a good collection in themselves, producing such long-lasting flowers that they maintain a house in a gay state from October till the end of January.—*W. P. Bound, February*, 1907.

A good deal of caution is necessary and should be exercised at this season when giving air, remembering that we are now entering upon a period when cold winds and bright sunshine are apt to be combined, thus rendering the possibility of injury by cold draughts extremely great; also, that Orchids, in consequence of darkness and general confinement during the winter months, are more susceptible to injury from this cause now than at any other time.—*J. Mackay, February*, 1905.

ROYAL HORTICULTURAL SOCIETY.

January 15th, 1924.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (hon. sec.), Jas. O'Brien, C. J. Lucas, R. Brooman-White, Arthur Dye, H. T. Pitt, H. G. Alexander, Fred. K. Sander, Henry H. Smith, J. Cypher, Chas. H. Curtis, W. H. Hatcher, John Cowan, J. E. Shill, Frederick J. Hanbury, T. Armstrong, E. R. Ashton, W. J. Kaye, and Stuart H. Low.

FIRST-CLASS CERTIFICATE.

Cypripedium Memoria F. M. Ogilvie var. The King, from G. F. Moore, Esq., Chardwar, Bourton-on-the-Water, Glos. (gr. Mr. Page). A handsome flower of large size, in which the dorsal sepal is white, greenish at the base, and marked with bold red-purple spots. Petals unusually well developed, the upper area brownish, the lower straw-coloured.

Odontioda Columbia (Oda. Alcantara × Odm. St. James), from Messrs. Charlesworth & Co. This plant carried a spike of nine medium sized flowers of deep blood-red colour, the segments being roundly formed.

AWARDS OF MERIT.

Cymbidium Queen of Gatton (insigne × Lady Colman), from Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier). One of the prettiest of Cymbidium hybrids, the large flowers tinged with rose-lilac and neatly marked with purplish lines and spots.

Cypripedium Charlotte Dillon, Chardwar var. (Lady Dillon × Pyramus). This large and handsome hybrid has an attractive dorsal sepal, orbicular in shape, greenish, bordered with white, and evenly spotted with blackish-purple. Petals very broad and of mahogany colour.

CULTURAL COMMENDATION.

To W. J. Naish, Esq., Pentire, Mill Road, Salisbury, for an excellent specimen of Cypripedium Leeanum var. Clinkaberryanum carrying a dozen well-developed flowers.

GROUPS.

Messrs. J. & A. McBean, Cooksbridge, were awarded a Gold Medal for a magnificent group, occupying 240 square feet. Special prominence was given to the numerous Cymbidiums, of which Floryi splendens bore flowers of a pleasing greenish-yellow, and rosefieldense var. Olivia had blooms of large size. Excellent examples of Cattleya Maggie Raphæl alba, some with four flowers on a spike, as well as early flowering plants of C. Mendelii were well staged. At one end was a superb plant of the rare Dendrobium Ashworthiæ, with a pair of many-flowered spikes, at the other end a fine specimen of Maxillaria nigrescens. Arranged in suitable positions were many superb Odontoglossums, including The Shrubbery

variety of illustrissimum, Jasper, with three fine spikes, Antinous with large blooms, and waltonense with attractive flowers of yellow colour. Hybrids of Sophronitis grandiflora were well seen in Slc. Rosalind, which bore medium-sized flowers of a bright blueish-purple, and in Slc. Isabel, of soft flesh-pink colour.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood) was awarded a Silver-Gilt Medal for a splendid group containing in the centre the handsome Odontoglossum crispo—Solon, Pitt's var., with a spike of five very large flowers. In other positions were the singular O. crispum var. Lady Jane and the scarce O. cordatum. Cymbidiums were staged in Queen of Gatton var. Goldfinch, a large flower of greenish-cream colour, while Lycaste Skinneri bore seven flowers and Eulophiella Rolfei a couple of many-flowered spikes. Cattleya chocœnsis alba and Cypripedium Triumphans were in fine form.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), received a Silver Flora Medal for an interesting exhibit containing a wide selection of Cymbidium Queen of Gatton (insigne × Lady Colman), the colour varying from delicate rose to reddish tints. Odontoglossums were staged in Lily Neuman and Mentone, while Lycastes were represented by Skinneri var. Enchantress and Tunstillii. Cypripedium Earl of Tankerville, C. Leeanum var. J. G. Fowler and C. Vashtii were all in fine form, and Odontioda Archibald carried a spike of orange-red flowers.

Messrs. Cowan & Co. were awarded a Silver Flora Medal for an attractive exhibit, the Cymbidiums being very pleasing, one called Ostrich (Gottianum × Wiganianum) standing out distinctly. In the centre was a plant of Odontoglossum Pescatorei with a spike of 80 flowers, while on either side were fine examples of Læliocattleya Urbania and H. T. Pitt. Cypripediums were well staged in Alcibiades magnificum, Becktoniæ and Nieuport, while Cattleya Zora represented a batch of hybrids raised between Percivaliana and Gaskelliana.

Messrs. Sanders received a Silver Flora Medal for a well-arranged exhibit containing an excellent example of Cymbidium Tracyanum bearing a long spike of eleven strongly scented flowers. Phalænopsis amabilis and Saccolabium bellinum were both in fine condition, and Oncidium barbatum also. Among the Cattleyas were handsome forms of Enid and Octave Doin, while good Læliocattleyas were seen in Royal Sovereign, with flowers of orange-yellow and a crimson lip. Cymbidium Curlew and C. Erica, as well as Bc. Pallas, carried fine spikes of bloom.

Messrs. J. Cypher & Sons received appreciation for their fine exhibit of Cypripediums, many of the best known hybrids being included, and all were very well flowered.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt, exhibited

Cypripedium Bendigo (Niobe × Bronzino), a richly coloured hybrid perpetuating the attractive characters of the former parent, but much darker.

Messrs. Stuart Low and Co. staged Sarcopodium Cymbidioides, with ten spikes of flowers, also Brassia brachiata and Maxillaria luteoalba. Odontiodas were staged in Wilsonii and Bohnhofiæ, while Sophrocattleya Dorea, Low's variety, carried blooms of bright reddish-scarlet. Brassocattleya Dietrichiana was in excellent form.

A. M. Gentle, Esq. (gr. Mr. A. J. Ruck), Church Crescent, St. Albans, exhibited Cypripedium William Price and Cyp. Nitens-Leeanum, both attractive flowers of pleasing colour.

Messrs. Charlesworth & Co. staged Odontioda Colinge, with a spike of twelve deep rose-pink flowers, the richly coloured Charlesworthea Rajah, Oncidium crispum, a recently imported plant with a spike of 39 flowers, and Odontonia Luna, with a long spike of 18 flowers heavily spotted with greenish-yellow.

THE ORCHID CLUB.

THE meeting held on January 11th was noteworthy for the fine varieties of Cypripediums and Odontoglossums, and for the excellent staging of the groups.

At 3 o'clock, Professor F. E. Weiss, F.R.S., gave a short account of the various epiphytic adaptations of Orchids, discussing the chief morphological changes which have enabled primitively terrestrial plants to assume the epiphytic habit.

PREMIER DIPLOMA.

Odontioda Hardyana (parentage unknown), from Fred Hardy, Esq. The flower, 3½ inches across the petals, has the outline of a good crispum. The sepals are flat and well covered at the basal portions with solid uniform orange-red colour (orange-red, 77, Klincksieck et Valette); the petals are flat, well displayed and of a solid uniform terracotta red (red, 29, K. et K.), with a white dentate margin; the well-formed labellum is similar in colour and margination to the petals. The plant carried a full spike of eleven flowers.

DIPLOMA OF MERIT.

Cypripedium Perseus (Alcibiades illustre × Lady Dillon). A well-formed flower of good proportions. The dorsal sepal is flat and well displayed, 3¼ trans-diameter, the basal portion chocolate-red, and with dots and lines of crimson radiating on to the white ground, leaving a clear marginal zone. The petals and labellum well displayed and chocolate-red in colour.

Cypripedium Nirvana (Alcibiades × aureum viginale), shown by Sir Wm. Thom, a large flower in which the dorsal sepal, dispro-

portionally high, is 3¼ inches diameter, white with a greenish yellow luna. The greenish-yellow petals and labellum are well displayed.

Cypripedium Benjamin Goodfellow (parentage unknown), from B. J. Beckton, Esq. The dorsal sepal, three inches in diameter, is circular in outline and of thick substance, the central area light green and with radiating lines of chocolate spots, the broad outer area being clear white. The petals are 1½ inches wide, light yellow, with a strong central band of chocolate and faint reticulations of similar colour.

GROUPS.

Fred Hardy, Esq., Ashton-on-Mersey (gr. Mr. C. Branch), showed a group of superbly flowered Odontoglossums, including amabile splendens, with a full spike of 13 large flowers and 10 examples of crispum xanthotes. Odontioda Mars carried a grand spike of 14 flowers. Læliocattleya Linda, with flowers of a pleasing rose-pink colour, occupied a central position, while on either side were many superb Cypripediums, one of the most attractive being a giant form of Rossettii.

Dr. Craven Moore, Manchester, showed a selection of Cypripediums, including The Prince, Minotaur, Roundhead, Memoria F. M. Ogilvie, and others.

A. T. Cussons, Esq., Kersal (gr. Mr. F. Cookson) exhibited an interesting and well-arranged group in which various Cypripediums, including the elegant little venustum, as well as fine examples of Maudiæ, were staged to advantage. Calanthes, Restrepias, and Epidendrum polybulbum were conspicuous.

B. J. Beckton, Esq., Irlams-o'-th'-Height (gr. Mr. W. A. Stewart), staged a group of Cypripediums, including a few home-raised seedlings. Cymbidium Perfume, with an arched spike of 26 flowers, and Cymbidium Golden Melody, with a spike of 13, were much appreciated. Colour was lent to the group by well-flowered plants of Calanthe Angela, Beckton's var., while Miltonia Bleuana also looked gay. Interesting species were staged in Cypripedium venustum, the richly-coloured Lycaste lasioglossa, and the charming Odontoglossum Œrstedii.

Sir William Thom, Blackburn (gr. Mr. R. Williams) showed a few well-grown Cypripediums, including Nirvana, Moonbeam, Britain's King, and Caractacus.

J. H. Walker, Esq., Eccles (gr. Mr. G. Weaver), exhibited a few select varieties of Cypripediums, including Perseus, Luna, Nirvana, Ballet Girl, and Memoria F. M. Ogilvie var. Rex.

Mons. Otto Salmonson, Stockholm, sent a painting of an interesting Cypripedium abnormality, which had just appeared in his collection. The ventral sepal was divided, so that two separate lateral sepals appeared, as in the genus Odontoglossum.

Messrs. A. J. Keeling & Sons, Bradford, showed a magnificently staged group of mixed Orchids, conspicuous amongst which were Cypripedium Monialis rubrum, Hera Euryades, Carter Place var., Thisbe, Lord Wolmer var. Plutus, Tom Worsley and Minotaur. Odontoglossums and Odontiodas were also staged in variety.

B. J. Beckton, Esq., also exhibited a series of twenty photographs of the best Cypripediums. They had been taken by himself, and showed the flowers life-size, thus forming valuable records.

MANCHESTER ORCHID SOCIETY.

December 13th, 1923.

MEMBERS of the Committee present :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Evans, W. Giles, Capt. Horridge, J. Howes, J. Jackson, A. Keeling, D. Losh-Thorpe, J. Lupton, E. Thompson, and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES.

Odontonia Dora, Haddon House var. (M. Bleuana × O. Dora), from P. Smith, Esq. Large flowers of fine shape, sepal and petals old rose colour, lip paler rose, orange disc interlined with rose.

Odontoglossum crispum var. Zev, from P. Smith, Esq. A large flower of the best type, white sepals and petals of thick substance.

Cypripedium bourtonense var. Invincible (insigne Harefield Hall × Blanche Moore), from S. Gratrix, Esq. An excellent hybrid of good shape.

AWARDS OF MERIT.

Cypripedium Peter Pan (Alcibiades × Peter), Cyp. Robin (Marina × Thompsonianum), Cyp. Actæus var. Phantasy, and Cyp. Cappamagna var. Miss Dorothy Sharpe ; from S. Gratrix, Esq.

Cypripedium Christopher var. West Point ; from Mrs. Gratrix.

AWARDS OF APPRECIATION.

Cypripedium Queen Maud (Queen Alexandra × Charlesworthii) ; from S. Gratrix, Esq.

Cypripedium Luptonii (Earl of Tankerville × Antinous) ; from Col. Sir J. Rutherford, Bart.

CULTURAL CERTIFICATES.

Mr. W. Giles, for Odm. amabile var. Princess, and Odm. eximium var. Snowdon ; Mr. J. H. Hayes, for Oncidium bicallosum ; Mr. J. Howes, for Cypripedium Chrysostum var. Our King.

GROUPS.

S. Gratrix, Esq., West Point, staged a group to which a Large Silver-gilt Medal was awarded ; A Hanmer, Esq., Buxton, was awarded a Silver-

gilt Medal for a pleasing exhibit; J. H. Hayes, Esq., Bolton, staged various Cypripediums; and R. Ashworth, Esq., Newchurch, exhibited some cut flowers.

Messrs. Cypher & Sons received a Silver-gilt Medal for a fine group of various Orchids; Messrs. Charlesworth & Co. staged Vuylstekeara Edna; Messrs. Keeling & Son exhibited various Cypripediums, as also did Mr. D. McLeod, of Chorlton-cum-Hardy.

The First Meeting of the Year was held at the Houldsworth Hall, Deansgate, Manchester, on January 18th, when there was an excellent display of Orchids.

Members of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. A. Ashworth, W. Beesley, A. Burns, A. Coningsby, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Evans, J. Howes, A. Keeling, D. Losh Thorpe, J. Lupton, E. W. Thompson, J. Whitham, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cypripedium The President (Gladiator × Eurybiades), from S. Gratrix, Esq. An exceptionally large flower, the dorsal sepal heavily spotted with large rosy-red spots, and having a broad white margin; sepals and petals bronzy-red.

Cypripedium J. M. Black var. The Premier, from S. Gratrix, Esq. A very fine flower having large raised claret-coloured blotches on the dorsal sepal.

Odontoglossum crispum The Duchess, a beautiful pure-white form bearing a spike of twelve flowers, thick in substance.

Odontoglossum Arachne, West Point var., from S. Gratrix, Esq.

AWARDS OF MERIT.

Odontoglossum ardentissimum var. Seagull, with a spike of 15 flowers of good shape, sepals and petals white, with clear reddish-brown blotches; Odm. Corona magnificum, flowers large and heavily blotched with violet-purple; Odm. Admiral (parentage unknown), large flowers richly coloured; Cypripedium Radium var. Avalanche, an elegant flower with fine-shaped dorsal sepal, white, with a small green area at the base; Cyp. W. H. Page var. Grace, a finely balanced flower of good shape; Cyp. Prince George (Camorin × Alcibiades); Cyp. Christmas Cheer; Cyp. Memoria F. M. Ogilvie var. Black Watch; and Cyp. Florence Spencer, Chardwar var., all from Samuel Gratrix, Esq.

Lycaste Hagha, from Mrs. Bruce and Miss Wrigley, a natural hybrid in the way of L. Tunstilli, but distinct, the lip being pure-white and the petals having many minute rose-coloured spots.

Odontonia Thais (M. Bleuana × O. Aglaon majesticum), a pretty

variety having reddish lines and blotches on a white ground ; and Odontonia Dora, Beardwood variety, both from Col. Sir John Rutherford, Bart.

CULTURAL CERTIFICATES.

Odontoglossum Arachne, West Point var., with a spike of 14 flowers. Odm. crispum The Duchess, with a spike of 12 flowers, both from the collection of Samuel Gratrix, Esq.

Lycaste Hagha, a splendidly-grown specimen having 10 fine flowers open, from the collection of Mrs. Bruce and Miss Wrigley.

Odontioda Diana, carrying two spikes with a total of 64 flowers; Oda. Red Cross, with a spike of 39 flowers: Odm. eximium var. Shackletonii, with a spike of 19 flowers; and Odm. Pescatorei var. Rex. bearing a spike of 30 flowers, all four plants from the collection of Philip Smith, Esq.

GROUPS.

Samuel Gratrix, Esq., West Point (gr. Mr. J. Howes), was awarded a Gold Medal for a magnificent group of Cypripediums and Odontoglossums of very high quality. The Cypripediums included many superb hybrids to which separate awards were given, as well as Chrysostom var. Stanley Baldwin, Nirvana, Climax and Perseus. The Odontoglossums comprised some fine examples that were duly certificated.

Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. A. Burns) were awarded a large Silver Medal for a group of Cypripediums and Lycastes. The former embraced a batch of the very pretty yellow and green Cyp. Armistice (Antinous × nitens), raised at Bridge Hall, as well as Becktoniæ, Maudiæ, King George and the F.C.C. variety of Perseus. Lycastes included Tunstillii and the new variety Hagha.

Philip Smith, Esq., Haddon House, Ashton-on-Mersey (gr. Mr. E. W. Thompson) showed a few Odontoglossums and Odontiodas, all perfect examples of good culture. Noteworthy plants being Odm. majesticum giganteum, Phœbe, Ward's var., crispum Snowball, and Odontiodas Red Cross and Diana.

Col. Sir John Rutherford. Blackburn (gr. Mr. J. Lupton) sent Odontoglossum Countess of Sefton, a heavily-blotched large flower of the Arachne type. Also Odontonia Dora, Beardwood var. and Ota. Thais.

Messrs. Charlesworth & Co. were awarded a Gold Medal for a splendid group of Odontoglossums and Odontiodas bearing long sprays of bloom, which made a beautiful effect and received much admiration. This included Odm. Fabia, a rich purple variety with a spike of 12 flowers, Conqueror with a spike of 14 flowers, Orosius, heavily blotched with rosy-purple and having a total of 17 flowers, Adula with a spike of 14, Regium, a beautiful rosy form, and several crispums of the Doinii type. Among the Odontiodas were Dulcies, Alcantara and Gratrixiæ, while

Odontonias were represented by Langowoyi, and Cypripediums by several promising hybrids.

Messrs. Cypher & Sons, Cheltenham, were awarded a large Silver Medal for an interesting group containing Cypripediums Nubia, beechense superbum, the Westonbirt variety of Helen II., Queen of the Belgians, and many others. Odm. Lambeauianum and Oda. Brawshawiæ were also good, while Lycaste Skinneri and attractive Calanthes were in prominent positions.

Messrs. Sanders exhibited Cattleya Enid var. Enchantress, a large flowered variety having pure-white sepals and petals and a richly coloured lip; Læliocattleya Royal Sovereign (Lc. St. Alban × Lc. luminosa), a beautiful hybrid with rich golden-yellow sepals and petals and a reddish-purple lip; Odontoglossum Minnewater (Her Majesty × illustrissimum), O. Marathon and O. Dulcie.

Messrs. Keeling & Son showed Cypripediums Lady Evelyn James, Olympus var. Don Juan, Mary Beatrice, Minotaur and the F.C.C. variety of Perseus.

Mr. D. McLeod staged Cypripedium Papyrus (Charlesworthii × Earl of Tankerville), with a finely formed dorsal sepal prettily spotted with rose.

THE MANCHESTER ORCHID SOCIETY.—The Manchester and North of England Orchid Society, which for many years past has held its meetings in the Coal Exchange, has removed to the Houldsworth Hall, Deansgate, Manchester. The first meeting of the year was held on Friday, Jan. 18th., when there was an excellent display of Orchids. In future, the meetings will be held on Fridays, and the following dates have been arranged: February 15th, 29th; March 14th, 28th; April 25th; May 9th, 23rd, and June 20th.

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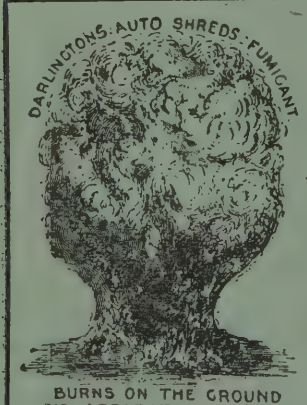

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THE ORCHID REVIEW.

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NOTES.

THE BARON SHRÖDER CUP.—Baron Bruno Schröder has most generously presented a handsome Challenge Cup, which will be awarded to the best group of Orchids exhibited by an amateur on October 21st, 1924.

R.H.S. ORCHID COMMITTEE.—The R.H.S. Council has decided to limit the various committees to a fixed number, and it has therefore been obliged to reduce the number of invitations to serve on the Orchid Committee for 1924. The new members are Sir Rutherford, Bart., Beardwood, Blackburn, and Mr. John C. Cowan, Southgate, London, N.

MR. PANTIA RALLI.—We deeply regret to record the death of Pantia Ralli, Esq., which took place at his residence, Ashtead Park, Surrey, on February 5th. Few amateurs have achieved such successful results as did Mr. Ralli. His splendid exhibit at the last Chelsea Show will long be remembered, as well as many other notable groups that have been staged at the R.H.S. Hall. An illustrated account of the Ashtead Park collection appeared in our issue for December, 1922. Mr. Ralli, who was lord of the manor of Ashtead, will be greatly missed by a wide circle of friends, while horticulture has lost one of its best supporters.

BOSTON ORCHID EXHIBITION.—Great preparations are in progress for the important exhibition of Orchids to be held at Boston, Mass., U.S.A., in May next. Mr. Gurney Wilson has accepted the invitation of the American Orchid Society to attend the exhibition and to act as Chairman of the Judges. He will take with him the Gold Medal of the Royal Horticultural Society as a special award for the best group, and a handsome Silver Cup that has been presented by the trade Orchid growers of Great Britain as a special prize for the finest Orchid at the Boston Show. Mr. Wilson, who will leave England early in April and be back at the end of May in time for the Chelsea Show, asks all readers to kindly excuse any delay in attending to correspondence during the period of his absence.

R.H.S. MEDALS.—The Council of the Royal Horticultural Society has decided that in future only the Banksian Medal shall be available for award in the R.H.S. Hall, Westminster, and that the Flora Medal shall be reserved for Chelsea. The Banksian Medal is available in the three grades of silver-gilt, silver and bronze, and these should prove sufficient for ordinary occasions, thus leaving the Flora Medal as a higher award for the finer groups that are staged at Chelsea.

R.H.S. CLASSES FOR SMALL AMATEURS.—I think it is a pity that small amateurs of say, 500 Orchids, are considered "outside the pale" in the R.H.S. competitions. I do think something might be done for them, which would, I am sure, bring more cultivators of the flowers we love so much. Also, I think discussion in your columns as to the best Orchids in the respective genera, and why? would be of considerable interest to your readers.—GEO. B. PUNNETT, Roughwood, Crockham Hill, Nr. Edenbridge.

ODONTOGLOSSUM TRIUMPHANS LATISEPALUM.—From the collection of Richard Ashworth, Esq., Newchurch, Manchester, we have received an excellent example of this species, the broad sepals accounting for the varietal name latisepalum. The petals and labellum are also much more developed than in the normal type. Od. triumphans was one of the discoveries of M. Linden, in 1842-3, who found it on the eastern Cordillera of Colombia. In one part of its native habitat it is associated with O. crispum, and hybrids, known as O. harvengtense, occur. Some of the large flowered forms of triumphans show signs of crispum influence, but in the particular example sent by Mr. Ashworth there is no evidence of any other species, which makes it all the more worthy of careful cultivation.

CYMBIDIUM IRIS AND C. EDINENSE.—From Mr. L. B. Stewart, of the Royal Botanic Garden, Edinburgh. we have received flowers of Cymbidium Iris (Lowianum × giganteum), a primary hybrid, intermediate in character, which was raised some few years, but not recorded. The front of the labellum bears the characteristic red-brown blotch of the former parent. By crossing C. Iris with C. Coningsbyanum a further hybrid has been raised in the above-mentioned Garden, and this has been named C. edinense. A flower shows that it belongs to the much sought after yellow colour section, the labellum bearing a few reddish lines and spots. It is well above the average size. A second example of C. edinense, distinguished as variety A. J. Munday, differs in having a greenish tinge on the sepals and petals. Both are useful additions to this popular section of easily-grown plants.

ORCHID CULTURE IN THE UNITED STATES OF AMERICA.

AT Somerville, New Jersey, along the Raritan River, is the magnificent estate of J. B. Duke, Esq. It comprises an immense park of 2,200 acres and of entrancing beauty. Here are to be seen the rarest Conifers in cultivation, and almost forests of varieties of Dogwoods and Magnolias. At the time of my visit these were in flower in great profusion and created a grand sight. Situated on high ground amidst these beautiful surroundings, I found the Orchid establishment in a compact block of ten houses, each 60 feet long and of varying widths. They are approached by a central corridor, running east and west, 120 feet in length and 12 feet in width. It is of modern construction and filled mostly with Cymbidium species and hybrids, all in perfect health. C. Pauwelsii and C. Doris were in flower, the former with spikes five to six feet in length and each carrying an average of 22 flowers. Other subjects in this corridor include batches of Oncidium crispum, O. Forbesii and O. Marshallianum. The last mentioned were imported ten years ago and are still in good flowering condition.

On entering the first house, containing 2,000 plants of Cattleya Mossiæ, I was met with a gorgeous sight of these plants in flower, and in many varieties. I was informed by Mr. A. Miles, the Orchid grower, that he commences to cut the flowers of this species for Easter, and that it is well into June before the batch is finished. Some plants in six-inch pots were carrying up to 15 flowers, which spoke volumes as to their condition. Suspended over the central stage I noted a large batch of Oncidium ampliatum of the majus type. The rich yellow flowers making a striking contrast to the blaze of mauve and purple Cattleyas beneath.

In the next house were staged about 1,500 of the largest plants of Cattleya Trianæ. They had completed their season's work at the time of my visit, and were having a rest, but their robust constitution was very apparent. The following house was partially filled with a splendid batch of 500 Cattleya Warscewiczii, said to be Mr. Duke's favourite Cattleya. These plants were in various stages of growth, and many new flowering sheaths attracted my attention. I also observed that more light and air were given to these plants than to those of C. Mossiæ. The reason is that owing to the rapid growth of C. Warscewiczii, a quicker means of hardening and ripening is necessary to produce good flowering results. This house also contains about 500 Cattleya Schrœderæ, and I was informed that it is customary to cut about 2,000 flowers of this species for Easter week. A great number of these are sold to the New York florists at prices varying from two to two and a half dollars each. How envious our English florists should be at these prices.

In another house are 500 plants of Cattleya Percivaliana, which, on taking into consideration their age, looked extremely well. As neighbours, they had another batch of later flowering Cattleya Trianæ. The next house was filled with C. labiata autumnalis, which is looked upon as a trusty servant. These plants are regulated as to their flowering season, so as to catch the extended demand for winter society functions. They realise high prices, up to three dollars each. These plants certainly seem to have settled down to regular work. They are hard and healthy. Every back bulb is kept for propagating purposes to increase the stock, as owing to the strict embargo now in force in the U.S.A., growers have to adopt new methods in place of importing plants from other countries. Suspended over the central stage is another batch of Oncidium splendidum, consisting of about 500 plants. They grow well and flower freely from December to March.

The next house visited is partially filled with Læliocattleyas, a section which Mr. Miles hopes may be supplemented by newer varieties possessing great vigour and freer flowering habits, for he intends to keep pace with his competitors. One large house contains quite a collection of its own, one end being filled with a healthy batch of Cattleya Gaskelliana, while close by are a number of Vanda cœrulea, Lælia anceps of the white type, Odontoglossum citrosum, Dendrobium formosum, and a fine lot of Calanthe Veitchii, C. William Murray, and the beautiful C. Harrisii, the white flowers of which are justly considered the most beautiful and useful in all the genus.

The adjoining house specially interested me, as it is set apart for Odontiodas and Odontoglossums. I saw in flower some splendid spikes that had recently been exhibited at the New York Flower Show, and which had there caused a mild sensation. They proved, without a doubt, the adaptability of the hybrids in this section. When one considers that the temperature during three or four weeks in the year is rarely lower than 90 degrees by day and 80 degrees by night in this part of New Jersey, we must consequently look upon these modern hybrids as most accommodating members of the so-called cool-house section of the Orchid family.

Some idea of the meritorious nature of this collection may be gained from the fact that three Gold Medals, six Silver Medals, and other awards, have been obtained at the New York Flower Shows, during recent years. Its extent may be judged when I mention that about 20,000 Cattleya flowers are cut annually.

Mr. Arthur Miles, the genial and enthusiastic grower, is by birth a Sussex man. In his early days he passed through the Blenheim collection, as well as other private and trade establishments in England. During the past fifteen years he has made his home in various parts of the United

States, thereby gaining much knowledge of the climatic conditions. He is therefore fully trained and able to take charge of such a large collection as is owned by Mr. Duke. I was pleased in seeing wide evidence of his capability, and greatly appreciated the pleasure he showed when renewing old ties of friendship, as well as the useful information he gave in helping me on my quest. A.G.E.

CYPRIPEDIUM INSIGNE SANDERÆ-KIMBALL.

AT the meeting of the Manchester Orchid Society on December 17th, 1908, Mr. E. Ashworth, of Wilmslow, exhibited a seedling that had been produced by crossing Cypripedium insigne Sanderæ with C. insigne Laura Kimball, and in which all the spotting of the former and the dark hairs of the latter were entirely suppressed. It received a First-class Certificate and was recorded as C. insigne Sanderæ-Kimball, E. Ashworth's variety. On the above date, it was stated that of four plants which had flowered, two were ordinary insigne and two albinos.

The seedlings that reverted to the typical insigne required no further description than Cyp. insigne. Those that perpetuated the well-known yellow colour were distinguished as Cyp. insigne var. Sanderæ-Kimball, in allusion to the two parental varieties known respectively as Sanderæ and Laura Kimball. However inelegant the varietal name Sanderæ-Kimball may seem, it must stand, unless good reason be found for substituting another.

At the dispersal of Mr. Ashworth's plants, a number of these yellow flowering varieties passed into various collections, where their number has been increased by propagation. Last December, several hundred of these flowers were produced on plants acquired, and subsequently propagated, by Messrs J. & A. McBean. Close inspection revealed differences that are worthy of note. On the whole, the plants are much more robust, and bear taller spikes, than either of the parents. The majority bear a few minute brownish spots on the dorsal sepal, some have one or more dark lines on the base of each petal, while in a few examples these brownish markings are entirely absent.

These spotless varieties, evidently pure albinos, agree entirely with the original description of Sanderæ-Kimball, E. Ashworth's variety, and on that account no further descriptive name seems admissible or necessary. But as Mr. Ashworth attached his own name to only a single example of the albinos produced from this particular seed-pod, others may have since flowered that are also worthy of descriptive names. This raises the question as to whether the compound word Sanderæ-Kimball must always be included. Mr. McBean facilitates matters by calling his spotless

varieties Cyp. insigne var. Royalty, but opinions differ, and it is said that the correct name should be Cyp. insigne var. Sanderæ-Kimball var. Royalty.

This brings up the point that a variety cannot be a variety of a variety, and consequently the variety Royalty cannot be a variety of the variety Sanderæ-Kimball. An analogous case can be given in the two yellow varieties, known as Sanderæ and Sanderianum; both are distinct varieties of insigne, and although they were produced naturally, and found amongst imported plants, one is not a variety of the other.

The name Cyp. insigne Sanderæ-Kimball should be applied to all those seedlings inheriting the precise characters of the parents, which briefly are a yellow coloured flower slightly marked with brownish spots and lines. Mr. McBean having distinguished a different and improved form, is entitled to record it, which he has done by adopting the name Cyp. insigne var. Royalty. And as the precise characters of the two varieties Sanderæ and Kimball are no longer visible in the flowers, we do not see why in this case the varietal name Sanderæ-Kimball should be continued.

It must be remembered that Mr. Ashworth's plant was also a spotless variety and on that account Cyp. insigne, E. Ashworth's variety is the earliest name. Mr. McBean may be able to prove that his Royalty variety possesses other points of merit that render this name valid, otherwise the earliest name must prevail.

Plants of similar parentage have recently flowered in the collection of Robert Paterson, Esq., Cathcart, Glasgow, with Messrs Sanders, and also in the Glasnevin Botanic Gardens, where they are known as Paphiopedilum Sanderæ-Kimballii. The name Yellow Prince has also been applied.

V.M.H. AND V.M.M.—The Victoria Medal of Honour has been conferred on Mr. Frederick J. Hanbury, F.L.S., of Brockhurst, East Grinstead, and the Veitch Memorial Medal has been awarded to Mr. James O'Brien, V.M.H.

ODONTOGLOSSUM EXIMIUM VAR. OSWALD WILSON.—A flower of this new variety comes from the collection of Geo. A. Wood, Esq., Harrogate. It was obtained by crossing ardentissimum Robsonæ with crispum Lucianii, and perpetuates the clearly defined characters of the former parent, an illustration of which was given in the *Orchid World*, III. p. 176. The present plant is named after Mr. Oswald Wilson on account of his keen love for Orchids and his success as an amateur grower. Mr. Wood also sends a flower of Odontoglossum Panther var. Betty, a large flower of the section comprising ardentissimum and Harryanum in the parentage. It is of a pleasing rose-coloured ground effectively marked with purplish spotting.

SPIRANTHES ROMANZOFFIANA.

By Henry Mousley.

I AM indebted to Mr. C. B. Tahourdin, of Wallington, Surrey, for first drawing my attention to the interesting paper on the above species by Colonel M. J. Godfery in the September number of the *Orchid Review* for 1922, pp. 261-64. At the time Mr. Tahourdin wrote me, which was on January 2nd, 1923, I had already commenced to study the underground development of the native Orchids that grow at Hatley, in the Eastern Townships, otherwise poetically known as the "Garden of Canada." Hatley is particularly rich in Orchids, for, up to date within a few miles of my house, I have discovered no less than forty species and varieties, which constitute a record, I believe, for Eastern North America. After reading Colonel Godfery's paper I at once saw that my experience with S. Romanzoffiana at that date differed considerably from his, and, in a minor respect, also with that of Drummond in 1810. It is not quite clear to me upon what amount of material, and whether wild or cultivated, Colonel Godfery based his conclusions, but I imagine he must have been severely handicapped from the extreme rareness of the species in Europe, whereas it is well distributed here, and I have had access to a large colony only a few minutes' walk from my house.

It appears from Colonel Godfery's paper that he takes exception to the findings of Drummond in 1810, who states, "Buds destined to flower the following year are formed among the leaves at the bottom of the flower stalk . . . the following spring each bud puts forth a pair of oblong knobs . . . and becomes a separate plant." The first part of this statement I take it is tantamount to saying that the bud precedes the tubers, and that the former does not develope until the following spring. The latter part of the statement evidently was ambiguous, and although literally it can be ascribed to saying that the plant was gemmiparous, I feel sure it was never intended to be meant so by Drummond. Colonel Godfery, on the other hand, if I read him aright, reverses Drummond's statement, for he says, "That a single tuber only is formed, and that this precedes the bud, which latter remains hard and closed through the winter, and does not break into leaf until the following spring. Furthermore, that the plant is not gemmiparous, the name gemmipara being solely founded on a misapprehension of Drummond's ambiguous statement." My views on the subject I hope to express more fully by means of the accompanying plates.

In figure No. 1, the bud spoken of by Drummond as destined to flower the following spring is seen on the right hand side, drawn out, to make it visible, from among the leaves at the bottom of the flower stalk. The date on which this plant was obtained was September 10th, but I have found

buds in an equally forward state early in August, which is about the time they can first be found, not seen, because they are hidden as it were by the sheathing of the leaves, and have to be drawn out as depicted in our plate. It will be noticed that there are no less than twelve tubers to this plant, which, from my examination of some hundreds of plants, leads me to believe is the maximum number one is likely to find. I have only found two with this number, the second one of which is figured later, on account of its difference in root system. In Colonel Godfery's paper we find no mention of any plant having more than from three to five tubers, which is of very common occurrence here.

SPIRANTHES ROMANZOFFIANA. FIG. NO. 1.

We now pass on to figure No. 2, which depicts two young vegetative plants, which, at the date they were obtained, October 2nd, clearly show the pair of oblong knobs or tubers just appearing, as described by Drummond, not, however, in the spring, but in the fall of the year. Figure No. 3 depicts a mature plant at the same date, which, as one would naturally expect, shows the two small tubers more fully developed. This plant, as will be noticed, has ten tubers.

Passing on to figure No. 4, we see a plant which was dug up on April 10th, and which seems to indicate that some growth goes on during the winter months, as these tubers are more developed than those on the plant shown in figure No. 3, which was obtained on October 2nd, as already stated.

FIGURE NO. 2

FIGURE NO. 3

In figure No. 5 we see two interesting plants, the one on the left consisting of a single tuber with two buds instead of the usual one, each of which, however, has the two small tubers at the base, but only three of these can be seen, the fourth being hidden away at the back. The plant on the right, with the two tubers, has no less than three buds, but all of these again have the two small tubers at the base, which, however, are invisible, except in the case of the foremost bud. With regard to this matter, I may say that I have several times found two spikes in flower on the same plant, but never three. It is by no means an unusual thing, however, to find six or more plants so close together that they almost appear as if growing in tufts, but the roots, although interlocked with one another, are always divisible into separate plants.

Taking our last figure, No. 6, the plant there shown is interesting in more ways than one. Firstly, because it has twelve tubers, and is the second example only, as already stated, that I have found with so large a number still remaining in evidence. Secondly, because these tubers instead of being in one whorl or rosette, as is usual, are in two, separated from one another by what, for a better word, I will call "internodes," although I am not quite sure whether the word is permissible in this particular instance. In the upper whorl, seven tubers are seen, with the new bud for the following year, the latter made visible by the entire stripping away of the old leaves which enshrouded it, as in the case of figure No. 1. In the lower whorl five tubers are seen, which it will be noticed are much darker in colour than any of the others. This is owing to a natural decay, or rot, setting in, which same thing can be seen in the case of figures Nos. 1 and 3. The way in which this division between the two whorls of tubers comes about is clearly seen in figure No. 2. In the left-hand plant the two tiny tubers are seen at the very base of the bud, which seems to be the usual thing, but in the right-hand plant these tiny tubers are seen to have developed some little way up the flowering stalk, which will give us a root development similar to figure No. 6, whereas the left-hand plant will have its root development similar to figure No. 1, *i.e.*, so long as each year's two new tubers appear at the base of the new bud, and not higher up, as in the lower of the two plants figured. I have a photograph showing three of these whorls one above the other, the basal one consisting of six tubers, the centre one of three, and the top one of two, these latter being the two new tubers for the year.

Summing up the result of my studies, it seems evident to me that, in the main, Drummond was right in what he said, although I do not agree with him "that in the Spring each bud puts forth a pair of oblong knobs . . . and becomes a separate plant." I maintain that these buds are put forth in the fall of the year, as is clearly shown by my photograph taken at that period, and not in the Spring, and that there is no such thing as each bud

FIGURE NO. 4.

FIGURE NO. 5.

becoming a separate plant. I, like Mr. St. Quintin, have never seen anything which might be detached from the parent plant and start life on its own, the same as occurs in, say, Habenaria clavellata. Of course, as already mentioned, I think this latter remark may be taken as an ambiguous statement on Drummond's part, he never intending it to be construed in the light it was.

It may be well before closing to say something regarding the general habitat of the species out here, in view of the apparent difference which I understand there is between the North and South Irish forms. Regarding the latter, what with the war, and the recent internal troubles in Ireland, it is some years, I believe, since anyone has seen or been able to collect any plants, and it is just possible they may be extinct. However that may be, it is evident from tracings of dried plants from near Cork, kindly sent me by Dr. Stephenson, of Winchester, that there is some difference between the South Irish plants and the ones I take here at Hatley in wet boggy ground, although they are very similar to others I have found at Coaticook, about nine miles from here, in drier loamy ground. The tubers of these latter plants are much thicker, and the leaves much broader as a rule, and not so long as those of the plants growing in the wet boggy ground at Hatley; in fact, they appear to be very similar indeed to the South Irish form, so far as I can judge from the tracings. As regards the plants from the North of Ireland, it seems pretty well agreed, I think, that they are practically, if not entirely, the same as we get in North America, *i.e.*, with the long narrow leaves as a rule, although I understand Dr. Schlechter keeps the Irish form apart from the American, not as a final decision, but merely because of the great geographical distance.

In another locality, about fifteen miles from here, I find the species growing in a large swamp all among the sphagnum moss, and there the plants, as a rule, are very tall, in one or two instances measuring as much as 54 cm., whilst an extreme raceme is 15.5 cm. in length. These measurements in both cases, however, are exceptional, the average height of 62 plants from all localities working out at 28.6 cm., with a raceme of 6.2 cm. As a rule, the flowers appear about the end of July, although I have found them as early as the 12th, but this is exceptional. They last until the first week in September, or a little later, about which time Spiranthes cernua comes into bloom. Regarding this later species, I am much inclined to think that the development of the root system is similar to that of S. Romanzoffiana, the only difference being that the two tubers do not develope until the Spring. I examined a large number of plants on November 29th of the present year (1923), at which date the new leaves were well developed, but the tiny tubers, apparently two, when visible, only appeared as very small knobs. Photographs were taken of them at

this stage, and it is hoped that further study in the Spring will settle the question.

In conclusion, the beautiful photographs from which the plates have been made were taken by the Geological Survey at Ottawa, from the living

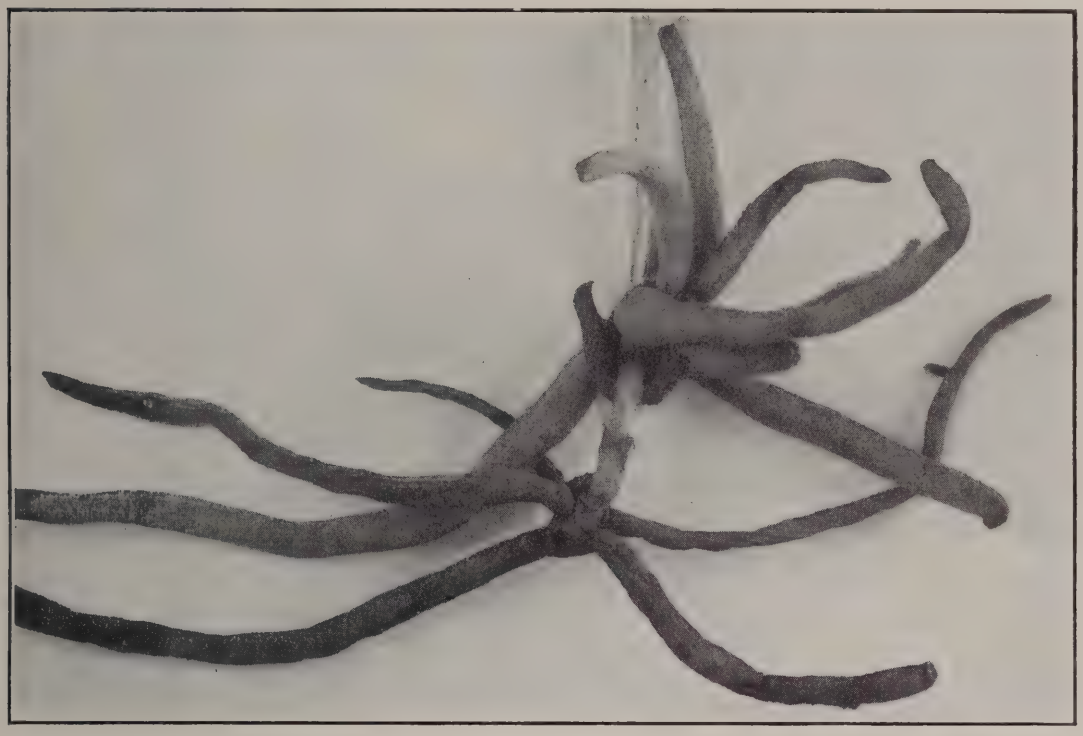

FIGURE NO. 6.

plants supplied by myself. Without these photographs it would have been useless for me to have undertaken this class of work, and my best thanks are due to Dr. M. O. Malte, chief botanist, National Herbarium, Ottawa, who has made it possible for me to obtain them.

Orchis latifolia.—Colonel M. J. Godfery, F.L.S., contributes to the *Journal of Botany* for February, "Orchis latifolia: a Historical Study." The article should be read in its entirety to be fully appreciated, but we may quote the following: "To sum up. The O. latifolia of Linnæus's early works was a composite species including all palmate marsh Orchids known to him, as well as the very different O. sambucina. In the 2nd ed. Fl. Suec. 1755, he differentiated O. sambucina and O. incarnata as separate species, thus eliminating from O. latifolia all the forms with invariably unspotted leaves. The segregation of O. Traunsteineri, Saut. in 1830 reduced O. latifolia, L. to a single unmixed species, normally with spotted leaves, exceptionally unspotted. This is the view held alike by the monographers of the Orchidaceæ and the authors of the greater floras."

ORCHIDS AT WANDSWORTH COMMON.

MR. HARRY DIXON commenced his horticultural career in 1878, and after serving eight years in two large private establishments joined the firm of Mr. William Bull, of Chelsea, in 1886, first serving in the stove and rare plant department, and subsequently in the section devoted to Orchids, much to his delight, for the cultivation of Orchids interested Mr. Dixon greatly. At that period Mr. Bull held an annual exhibition of these plants at his Chelsea establishment during the months of May, June and July, and practically all the Orchid lovers of the day came from various parts of the world to visit this show. After a considerable period as a grower, Mr. Dixon was selected to act as buyer and salesman, in which capacity he remained until 1910, when he commenced business on his own account at Wandsworth Common. His general knowledge of plants, apart from Orchids, stood him in good stead, and brought him in contact with a large number of horticultural enthusiasts. Although at times his stock of Orchids is small, a very large number of plants pass through his hands during the year, these being chiefly surplus and duplicate plants from world-renowned private collections. A special point is made of never sending out a plant of any description that is not in perfect health.

Cypripedium insigne Sanderæ is a great favourite here, and a splendid batch of healthy and vigorous plants is maintained in sizes varying from three growths to large specimens with about twenty growths. These plants had just finished flowering at the time of the writer's visit, but evidence remained to show that they had carried an average of seven flowers each. When recently exhibited at the R.H.S. Hall they were greatly admired. This chaste and beautiful variety of a well-known species can now be purchased at such a reasonable figure that even the smallest amateur is able to include it in his collection. A large number of these plants are disposed of during the year, and they always give great satisfaction on account of the facility attending their cultivation.

A good stock of other useful Cypripediums is maintained, amongst which are Maudiæ, always popular, the elegant callosum Sanderæ, Desdemona, Hera Euryades, represented by a grand specimen of the New Hall Hey variety, Kubele grande, the well-known Leeanum var. J. Gurney Fowler, as well as some promising unflowered seedlings of excellent parentage.

Among the Cymbidiums is a fine plant of Lowianum, Fir Grange variety, which obtained an Award of Merit, R.H.S., April 3rd, 1906, and which is still considered as one of the best varieties of this popular species. Odontoglossums flourish well, and comprise some choice varieties of the well-known species and hybrids. Mention may be made of O. crispum

xanthotes, O. crispum roseum, a flower of grand shape and evenly suffused with rose colour, O. St. George, and O. Fascinator aureum, a fine yellow of considerable merit. There are also representatives of the true old Pacho type of O. crispum, which never fail to find a purchaser on coming into flower. In the same house Odontiodas are growing well, and among the selected varieties is a strong plant of Gladys (Oda. Bradshawiæ × Odm. Pescatorei), also Vuylstekeæ, Charlesworthii and Cookson's variety of Bradshawiæ. A typical form of this last mentioned hybrid carried a spike of 28 flowers, and a novelty of pleasing character exists in Oda. elegans (cirrhosum × Bradshawiæ), with a spike of 26 flowers, the prevailing colour being scarlet.

The Cattleyas include Mossiæ, and its white form Wageneri, labiata, Trianæ, and Mendelii, while hybrids are to be seen in plants that range from small seedlings to large flowering-size plants. They include Læliocattleya Schrœderæ, a popular cross possessing a strong constitution, Lc. Prince John, Lc. Colmaniana superba, Lc. Rubens and Lc. Epicasta, the latter easily recognised by its expansive labellum. Brassocattleyas are grown in Muriel, the elegant Penelope, and Digbyano-Mossiæ var. Queen Alexandra, this latter yielding cream-white flowers. Another hybrid in this section is Bc. Thorntonii, while a novelty that has flowered well this spring and gives much promise is Bc. Rhodesia (C. armainvillierensis × Bc. Digbyano-Mossiæ). Growing in a shallow pan is Lælia Dayana cœrulea, which yields flowers of a pretty bluish tint, and Lælia Gouldiana with tall erect flower-spikes.

Some fine specimens of Dendrobium nobile, as well as one or two plants of D. infundibulum, promise well for flower, and an interesting plant is to be seen in D. delicatum, which has been produced by crossing the two Australian plants known as D. Kingianum and D. speciosum var. Hillii. It was given to Mr. Dixon by an amateur cultivator of Orchids, and as it is making a spike, the flowers will probably be seen early in the year. A very distinct looking Orchid has just been received by Mr. Dixon from Rhodesia, where it was collected by his son, Mr. Harold E. Dixon. It has the appearance of an Ansellia, but, strange to say, there is no evidence of its having flowered. However, it is being carefully cultivated.

Masdevallias are cultivated in shallow pans suspended from the roof, except during the hot summer weather, when they are removed to the staging below, a method of treatment that appears quite suitable to their requirements. The representatives of this genus include the Peruvian melanopus, and the Colombian kinds known as Carderi, Troglodytes and corniculata, as well as the quaint Chimæra and bella. There is also a plant of Scaphosepalum octhodes, commonly known as the Owl Orchid, also the pretty Restrepia maculata, and a large specimen of Pleurothallis Rœzlii, with many flowers of a deep blackish-purple colour.

On one of the side stages of a span-roofed house is a splendid batch of about a hundred Læliocattleyas and Brassocattleyas, mostly with flower sheaths, and many with the buds well advanced. On the opposite stage a batch of fifty Cattleya Fabia were partially packed for dispatch to a well-known grower. Adjoining these were several flowering Cypripediums, of which Actæus langleyense bore an attractive flower, having a clear white dorsal sepal and lemon-yellow petals and labellum. A good form of Cyp. concinnum (villosum × purpuratum) also attracted attention on account of its glossy flowers of rich coloration.

Mr. Dixon is ably assisted by his eldest son Mr. Cyril J. Dixon, and alternately they endeavour to attend to the requirements of their clients and the wants of their plants.

CŒLOGYNE INTERMEDIA.—An interesting deviation from the normal type of flowers borne by Cœlogyne intermedia (cristata × Massangeana has occurred in the collection of Otto Salmonson, Esq., Stockholm. The floral segments have been reduced to two sepals and two petals, placed at right angles, and resembling the windmill-like flower described on page 290 of our last volume. Mr. Salmonson's example is another instance of a reduction from the trimerous condition to the dimerous, and it is interesting to note that the flower was produced on the old portion of the stalk, after the production of normal flowers on the apical part.

CYPRIPEDIUM LEEANUM.—This popular Cypripedium hybrid made its first appearance in January, 1884, when it was exhibited by the raisers, Messrs J. Veitch & Sons, at the Royal Horticultural Society, a First-class Certificate being awarded. It is figured in the *Orchid Album*, t. 223. In the following year another example was exhibited by Sir Trevor Lawrence, in whose collection a larger batch of seedlings had been raised. Eleven distinct varieties of Leeanum subsequently received recognition from the R.H.S., among them being the variety Clinkaberryanum, which received an Award of Merit, December 15th, 1903, when exhibited simultaneously by Baron Sir H. Schröder, Mr. N. C. Cookson, and Mr. O. O. Wrigley. At the meeting of the Royal Horticultural Society held January 15th last, a Cultural Commendation was granted to Mr. W. J. Naish, Pentire, Salisbury, for an excellent example of this same superb variety growing in a seven-inch pot, densely covered with vigorous foliage, and carrying twelve finely-developed flowers, as well as an expanding bud. It is such examples of cultivation as this that we desire to see more frequently staged by amateurs at the R.H.S. meetings, and it is much to be hoped that the Society will suitably encourage such exhibits.

BOTANICAL ORCHIDS.

THE following is a summary of an interesting paper read by Mr. B. J. Beckton, at the meeting of "The Orchid Club," held at Manchester, on February 1st.

Most collectors, whether their special hobby be postage stamps, coins, furniture, pictures, or Orchids, are undoubtedly more or less influenced by that curious condition of the human mind, which makes men and women copy each other's ideas so closely that they form the same opinion as to what is the correct thing to collect, or the best ideal to aim for. In our particular hobby, plants now known as Botanical Orchids were much sought after 25 to 30 years ago, and carefully cultivated in most of the collections in this country. The hybridist, who had been making slow progress over a number of years, then began to make such improvements in certain genera of the Orchid family that people got badly bitten with the desire to improve on the wild species, and produce what is commonly called a florist's type of flower. The natural result was that only those genera which lent themselves to this improvement, such as Cattleya, Lælia, Dendrobium, Odontoglossum, and Cypripedium, were sought after by collectors. In quite recent years, two more genera, Miltonia and Cymbidium, have been added to the list. To such a pitch has the desire for raising seedlings of these genera attained, that to find a representative of any of the other Orchid genera in collections to day is the exception rather than the rule. This means that out of a possible 100, or more, for the most part fairly well-known and easily cultivated genera, only seven are thought anything of by collectors to-day. Would it not reduce the rather monotonus effect of some present-day collections, if their owners could realise that there is grace and beauty in the lesser grown species of Orchids? And that to find a corner for these would in no way harm the present occupants of the houses. Further, a contrast to their favourites in habit and inflorescence would rather add to their charm than otherwise.

This brings me to the subject matter of my paper: "Botanical Orchids and why I grow them." My remarks must not be taken as in any way derogatory to the work of the hybridist. This work is most valuable as it stimulates collector's interest in Orchids and provides an ideal to aim for. At the same time, though I fully appreciate the big improvement made in certain species of Orchids, I contend that the hybridist is totally unable to improve on others. I maintain that good varieties of species, which possess what I call vigorous characters, may, and often do, have their good characteristics destroyed when crossed with other species. Notable example may be found in Cypripedium, a favourite genus with Northern Orchid growers.

I have never yet seen a hybrid of C. Fairrieanum that is an improvement on its parent. The improvement to other species of Cypripedium, whose character is weak or common-place, by the introduction of Fairrieanum blood has been immense. I do not argue that species with strong character are of no use to the hybridist. Far from it, the point I wish to drive home is that as some of these species cannot be, or at least have not been, improved upon, a few are worth growing. Surely these species are of more decorative value than some of the third-rate hybrids which fill up the body of so many collections to-day. Again, whenever C. Rothschildianum has been crossed with other species, all its marvellous character has disappeared. The same remark applies to Selenipedium caudatum and S. caricinum, the former a wonderful sight when well flowered, and the latter of a daintiness quite indescribable.

These are what I would describe as Botanical Orchids, and in my opinion they hold their own when placed in a group with the best and most expensive hybrids of the same genus. In fact, they not only hold their own, but improve the general effect of the group.

The species of Aërides are among the most beautiful of Orchids, many of them uniting every quality that a plant can possess. Even when not in bloom the plants themselves are interesting objects, and give a tropical character to a collection. As far as habit is concerned, there does not seem to be much variation in this genus: they all have upright stems with fairly stiff leaves on opposite sides. The flowers, which are rich and delicately coloured, are produced from the axils of the leaves, and take the form of racemes from six inches to two feet in length. Nearly all these plants have sweetly-scented flowers. Those of A. affine are so powerfully scented, that on one occasion when I cut a spike and put it in water, the water was transformed into a pleasing and powerful perfume that retained its aroma for several days after the spike was removed. In a genus which contains such uniformly handsome plants, it is a difficult task to make a small selection. I must draw attention to Aërides Sanderianum, for I had this in flower during the past winter with two spikes each bearing 40 flowers, resembling lumps of pink and white sugar candy, and having a most delicate and pleasing perfume.

The genus Epidendrum is remarkable for the varied habit of the component species. On the one hand we have the tall, scandent varieties, standing as high as a man, and comprising some of the most brilliantly coloured flowers existing among the Orchids. These plants last several months in bloom, and when seen in a mass their brilliant flowers are shown to perfection against the bright green foliage. No Orchids, and very few other plants, have foliage of such a delightful shade of green. The colours of the flowers range from cadmium yellow in E. xanthinum, through all

shades of orange, red, and purple, to a remarkable brilliant pure scarlet in E. radicans. On the other hand, in E. polybulbon we have a neat little plant standing barely three inches high, which in its season is starred all over with little yellow-ochre and white flowers. In between these two extremes in habit and stature we have an apparently endless array of plants, each possessing quite a different habit to its neighbour, the best known of which is the extremely useful E. vitellinum autumnale.

An interesting plant which is not so well-known is E. Stamfordianum It is remarkable in that the flower spike is produced from the base of the bulb and not from the apex, which is where one would expect it. This plant is the first of the Botanical Orchids which I bought. I remember the occasion quite well. Hitherto I had belonged to the group of collectors who concentrate on one or two genera, and unless the plant offered belonged to one of these genera it had very little chance of entering the Daisy Bank collection. About this time I began to feel there was something lacking in my collection. My friends and others to whom I showed my plants did not seem to be either impressed or interested, a flicker of interest would be roused when I picked up a good Cypripedium hybrid and showed them the parents with a view to explaining the improvement, but even then very few people appeared to be capable of appreciating the difference between a first-class and second-class flower. Like good music, so it is with a good Cypripedium, to appreciate its points one has to be educated up to it. Also I, myself, was very dissatisfied. I attended various Orchid shows and meetings, and when on committee an apparently endless array of beautiful Cattleyas, Dendrobiums, and Odontoglossums passed before me. From a florist's point of view some of these, especially the Odontoglossums were too perfect, so perfect indeed that to me they looked artificial, but they were all too much like one another, something was missing. I asked myself: What is it that is missing in these flowers? One day I received the solution.

A well-known trader turned up at Daisy Bank with his box full of good things; knowing my weakness for Cypripediums, the box was full of them. One by one he carefully took out the plants and revealed them to my admiring gaze, but I was not particularly struck with any of them, and right at the bottom of the box I spied a spike of cut flowers. I did not give my friend time to get it out of the box, I dived for it like a cat after a mouse, and it proved to be Epidendrum Stamfordianum. In a flash I saw what was missing in my collection, and also in the aforesaid endless array of hybrids—character. To-day, therefore, it is character which I am always looking for in Orchids, and I find that the most marked character is to be found among the species. Although in a large number of hybrids the best characters of the parents are amalgamated so as to form a pleasing

combination, yet very often the character of one parent neutralizes the character of the other.

I now come to the disappointing genus, from a natural point of view, called Oncidium. The fact that most of the species are so difficult to keep in health is undoubtedly one of the greatest tragedies of horticulture. Orchid collections and groups as shown at all the exhibitions are sadly lacking in the colour yellow. Most artists will tell you that the colour which goes best with lilac or mauve is yellow. If we could grow the Oncidiums well and obtain from 50 to 100 flowers on a spike, the effect would be wonderful when the plants are judicially placed in a group of Cattleyas. Poorly as they are grown, they always bring a ray of sunshine to any group in which they are included. The genus is an extensive one, consisting of over 250 known species, and naturally out of such a large number there are a lot worthy of cultivation.

R.H.S. TWO-DAY SHOWS.—In order not to deter the owners of new or special plants from submitting them to the committee for award, the Council has decided that written application may be made to the Secretary for leave to remove such plants at five p.m. on the first day of a two-day Show. No plant may be removed from the building under this regulation until the written application has been initialled by the Secretary.

CYPRIPEDIUM BELLATULUM.—Many amateurs experience no small amount of difficulty regarding the cultivation of this Cypripedium, and also the closely allied Godefroyæ, niveum and concolor. It is generally believed that surplus water in the centre of the growths is the cause of premature decay, and on that account drier conditions have been adopted for this section of the genus. In not a few cases the supply of water has been so diminished that the plant's vigour has been seriously curtailed. Recent experiments suggest that these comparatively dry conditions are by no means beneficial to the plants existence, but act rather in the reverse way. Messrs J. & A. McBean have a batch of C. Godefroyæ, potted in a mixture of loam and fibre, and growing on a side stage near the glass in a house having a fairly high temperature. Their condition can only be described as vigorous in the extreme. Enquiries as to how these luxuriant results were obtained brought forth the information that the plants receive an abundant supply of water, in fact they are deluged with water on all days when anything like favourable weather prevails. It may be that these particular plants have accustomed themselves to these conditions, but, in any case, the results are so satisfactory that the method may be recommended for trial by other growers. Perhaps the secret lies in abundance of moisture combined with a fairly high temperature.

MR. W. H. WHITE.

AMONG the Members of the R.H.S. Orchid Committee who retired with the past year, no one will be missed more than Mr. W. H. White. At the meeting held January 15th, the Committee passed a special Vote of Appreciation in respect to the valued assistance rendered by him during the last 34 years. Mr. White spent the first ten years of his Orchid life with Messrs. J. Veitch & Sons, followed by seven years with Mr. Chas. Dorman, of Lawrie Park, Sydenham, when he was appointed Orchid grower to Sir Trevor Lawrence, Bart., a position he held for 25 years. During four subsequent years he took temporary charge of Mr. Pantia Ralli's collection at Ashtead Park, Surrey.

During this long and successful career as a cultivator of Orchids, many rewards have come to him, the earliest being a First-class Certificate to Odontoglossum crispum, var. Mrs. C. Dorman, July 13th, 1886. No less than a hundred Cultural Commendations have been awarded to Mr. White on various occasions. The first was obtained on September 6th, 1892, for Habenaria militaris, a success followed by a wide range of genera, and including many rare species that have probably never since been seen in equally fine condition. In 1902 he received this award for Angræcum Kotschyi which had been previously cultivated at Burford since its introduction in 1880, and also for Cattleya Mossiæ with 48 flowers, then described as one of the best specimens yet exhibited. In 1906 Phalænopsis Aphrodite was shown, with a branched spike of 80 flowers and buds; in 1907 Bulbophyllum longisepalum with 14 flowers; in 1909 Angræcum Kotschyi with eight spikes, the longest bearing 15 flowers; in 1911 Dendrobium Victoria Regina with 30 spikes; and in 1913 Sophrolælia Psyche with 80 flowers. Mention may also be made of Dendrobium fimbriatum with 40 spikes, Platyclinis filiformis on several occasions, once with 109 flower spikes, and Sophronitis with 60 flowers.

Probably Mr. White's most notable achievement was the flowering in 1897 of the Giant Orchid, Grammatophyllum speciosum, when the Royal Horticultural Society's Gold Medal and F.C.C. were awarded. In the same year the Manchester Orchid Society awarded a Gold Medal to Cypripedium Olenus, Burford variety, as being the finest hybrid of the year. In 1900 a F.C.C. was given to Maxillaria scurrilis, one of the many rarities then in the collection of Sir Trevor Lawrence. An illustration of it is given in the current issue.

An excellent paper on "Inconspicuous and Rarely Cultivated Orchids" was read by Mr. W. H. White at the meeting of the Royal Horticultural Society held March 26th, 1901, when he remarked that a *collection* of Orchids should properly aim at embracing the whole of this very large

order of plants, made up of tribes and sub-tribes, of many genera, and a vast number of species. The Orchideæ may challenge comparison with any natural order in the beauty, colour, and diversity of their flowers. The natural order shows endless variety in modes of growth, epiphytal and terrestrial, in size, colour, shape, and mode of flower production, as well as in peculiarities of fertilisation. If an Orchid lover grows a *selection* of these plants, it will generally be one which consists mainly of the more showy genera, such as Cattleyas, Lælia, Odontoglossum, Dendrobium, and perhaps Cypripedium. He added that even such beautiful genera as Aerides and Saccolabiums are now comparatively rarely seen in collections, though in the palmy days of the great Chiswick Shows, they were prominent in exhibits, and were greatly admired.

During the period of Orchid grower to the late Sir Trevor Lawrence, Mr. White had the honour of conducting many notable personages through the collection, and on the occasion of the visit of the late Prince Fuishimi, he was presented with a valuable lacquer box. He is also justly proud of the fact that many of the large groups staged by him, for Sir Trevor, at the famous Temple Shows, were awarded Gold Medals. One of his most treasured awards is the Veitch Memorial Medal, in silver, and last but not least, Mr. White contributed the series of "Cultural Notes" to the first volume of the *Orchid Review*, 1893.

ODONTIODA CHING.—This novelty has recently flowered in the collection of J. J. Joicey, Esq., The Hill, Witley (gr. Mr. J. Mackay). The parentage is Odm. tigrinum × Oda. Charlesworthii. The sepals and petals are cream-white bordered with yellow, while the labellum is yellow. All the segments bear a few reddish spots.

ORCHIDS OF AUSTRALIA.—Contributions to the Orchidaceous Flora of Australia is the subject of a paper contributed by Dr. R. S. Rogers, M.A., to the Royal Society of South Australia (*Trans. xlvii.*, 1923). The new species described are Caladenia cristata, a slender hairy plant about 30 cm. high; Prasophyllum Colemanæ, named in honour of Mrs. Coleman and her daughters, enthusiastic collectors of Orchids in Victoria; P. Tadgellianum, previously described as a variety of P. Frenchii, but now given specific rank; Microtis oblonga, a species by no means uncommon in Victoria and South Australia; and Pterostylis decurva, which is said to come very close to P. obtusa, but it blooms at a totally different period of the year in exactly the same locality, and in the living plant it differs strikingly in the extreme decurvature of the apex of the galea, a characteristic feature which is often lost in the process of drying and pressing. Analytical details of P. decurva are shown in an accompanying plate.

MAXILLARIA SCURRILIS.

ORCHID LECTURES BROADCASTED.—Mr. G. H. Pring, Horticulturist to the Missouri Botanical Garden, U.S.A., has been giving a series of Orchid lectures, including "Collecting Orchids in Colombia," which have been broadcasted from the Grand Leader Radio Station, and subsequently from the Post-Dispatch Station.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR
Brassocattleya Christmas ...	Bc. Thorntonii × C. Schrœderæ	Sanders.
Brassocattleya D reen	C. Trimos × Bc. Digbyano-Mendelii	Stuart Low.
Brassocattleya Ella	C. Fabia × Bc. Rutherfordii	Charlesworth.
Brassocattleya Esther	Bc. speciosa × Bc. Digbyana	,,
Brassocattleya Mirabeau ...	Bc. La Marne × C. Hardyana	Chas. Maron.
Brassocattleya Rhodesia ...	C. armainvillierensis × Bc. Digbyano-Mendelli	H Dixon.
Brassocattleya Theba	C. Rhoda × Bc. Mrs. J. Leemann	Charlesworth.
Brassolæliocattleya Biddy ...	Bl. Mad. I. Mavrocordata × C. Thurgoodiana	C. J. Lucas.
Brassolæliocattleya Elta ...	Bc. DigbyanoWarneri × Blc. Cooksonii ...	Charlesworth.
Brassolæliocattleya Evalina ...	C. Schrœderæ × Blc. Wotan	Stuart Low.
Brassolæliocattleya Idina ...	L. Sirius × Bc. Mrs. J. Leemann	Charlesworth.
Brassolæliocattleya Nigeria ...	Blc. pulcherrima × C. Warscewiczii	,,
Brassolæliocattleya Ornatus ...	Blc. Cooksonii × C. Antiope	,,
Brassolæliocattleya Perseus ...	Bc. Digbyano-Mendelii × Lc. luminosa ...	,,
Brassolæliocattleya Pharos ...	Bc. Mrs. J. Leemann × Lc. Smilax	,,
Brassolæliocattleya Sheila ...	Blc. Cooksonii × C. irideseeus	,,
Brassolæliocattleya Shinjik ...	Lc. luminosa × Bc. Ilene	Tokyo Gardens.
Brassolæliocattleya Thisbe ...	Bc. Digbyano-Schrœderae × Bl. Digbyano-purpurata	Charlesworth.
Brassolæliocattleya Turinga ...	Lc. Auriole × Bc. Mrs. J. Leemann	,,
Cattleya Artis	Rhoda × iridescens	,,
Cattleya Calypso	Mrs. F. Hurndell × Fabia	,,
Cattleya Carina	Almata × Dowiana aurea	,,
Cattleya Charlotte Netherway ...	Bertii × Trianæ	F. J. Hanbury.
Cattleya Mildred	Fabia × Rhoda	Charlesworth.
Cattleya Okami	Suavior × Warscewiczii	Tokyo Gardens.
Cattleya Trimos	Trianæ × Mossiæ	Stuart Low.
Cattleya Viscount Ijuin	Carmen × Warneri	Tokyo Gardens.
Cypripedium Bendigo	Niobe × Bronzino	Sir G. Holford.
Cypripedium Benedict	Bendis × Bronzino	Mrs. Bruce, Miss Wrigley
Cypripedium Charlotte Dillon ...	Lady Dillon × Pyramus	G F. Moore.
Cypripedium Earl Marshall ...	Earl of Tankerville × King George V. ...	Mrs. Bruce, Miss Wrigley
Cypripedium Lady Babbie ...	Actæus × Hera	,, ,,
Cypripedium Mary G. Waller ...	Zeno × Actæus	F. J. Hanbury.
Cypripedium Mother Eve ...	Mrs. F. Sander × Eve	Mrs. Bruce, Miss Wrigley
Cypripedium Obelisk	keighleyense × Memoria Jerninghamiæ ...	,, ,,
Cypripedium Robin	Marina × Thompsonii	S. Gratrix.
Cypripedium Seamew	Mrs. Cary Batten × Troilus	Mrs. Bruce, Miss Wrigley
Cypripedium Sgt. Murphy ...	Beryl × hirsutissimum	,, ,,
Cypripedium The God Pan ...	Lord Wolmer × Satyr	,, ,,
Cypripedsum Uriah Heap ...	Hera × Moonbeam	,, ,,
Læliocattleya Attraction ...	luminosa × Myrrha	Charlesworth.
Læliocattleya Ceto	C. Bowringiana × Lc Colmaniana	,,
Læliocattleya cruenta	Creusa × Thyone	,,
Lælioca tleya Daffrosa	Lc. Neleus × C. Venus	,,
Læliocattteya Dainty	Triopas × Golden Oriole	,,
Læliocattleya Elmina	Lc. Myrrha × C. Venus	,,
Læliocattleya Gaika	C. Gaskelliana × Lc. St. Gothard	,,
Læliocattleya Grace	Lc. Elinor × C. Rhoda	A. Watson.
Lælıocattleya Laguna	Lc. Dominiana × C. Tityus	Charlesworth.
Læliocattleya Maros	C. Iris × Lc. Thyone	,,
Læliocattleya Medusa	Thyone × Golden Oriole	,,
Læliocattleya Modasa	C. Maggie Raphael × Lc. St. Gothard ...	,,
Læliocattleya Netty	B. Basil × Lc. St. Gothard	,,
Læliocattleya Palmata	Daphne × Dominiana	,,
Læliocattleya Phædra	Lc. amabilis × C. Hardyana	,,
Læliocattleya Royal Sovereign...	St. Alban × luminosa	Sanders.
Læliocattleya Sarepta	C. Venus × Lc. Thyone	Charlesworth.
Læliocat leya Shibata	Lustre × luminosa	Tokyo Gardens.
Læliocattleya Sicilia	C. Dowiana aurea × Lc. Bola	Charlesworth.
Læliocattleya Shinjik	Lc Vesta × C. Dowiana	Tokyo Gardens.
Læliocattleya Tekoa	Lc. Creusa × C. Dowiana	Charlesworth.
Læliocattleya Titian	St. Gothard × Bella	Sanders.
Læliocattleya vernalis	C. chocœnsis × Lc. Bella	Charlesworth.
Odontioda Ching	Odm. tigrinum × Oda. Charlesworthii ...	J. J. Joicey.
Odontioda elegans	Odm. cirrhosum × Oda. Bradshawiæ ...	H. Dixon.
Odontioda Redbreast	Odm. Amethyst × Oda. Bradshawiæ ...	F. J. Hanbury.
Odontoglossum Maharaja ...	mirum × Queen Alexandra	C. J. Lucas.
Odontoglossum Molly	Aireworth × Her Majesty	Robt. Paterson.
Odontoglossum Pavonia ...	maculatum × crispum	Charlesworth.
Odontoglossum Rosheriæ ...	Groganiæ × V.C.	Sir. J. Colman.
Sophrolæliocattleya Aspersa ...	Slc. Niobe × Slc. Marathon	Charlesworth.
Sophrolæliocattleya Tuga ...	Slc. Niobe × Lc. Dominiana	,,

NOTE.—Plants above referred to as of Tokyo Gardens were raised in the Imperial Botanic Gardens, Shinjik, Tokyo.

NOTES FROM COSTA RICA.

By C. H. Lankester.

A COMMON species in the wet forest of the Atlantic slopes is Mormodes Colossus, growing at 3,000 to 6,000 feet elevation. It is especially abundant on decaying trees, sometimes little colonies are found on stumps of felled trees, and it shares a preference for such stations with species of Cycnoches, at least the section Heteranthæ, and may be successfully cultivated in rotten wood.

Sievkingia suavis.—A plant of this species brought from San Carlos in April of last year had several seed-capsules which ripened here, and on bursting showed the whole mass of seeds to be in continual motion, as though the capsule was invested by larvæ, which, however, was not so. It may be that all the Stanhopea group have this property, and opportunity will be taken to observe if this is so.

Ornithidium Lankesteri.—This beautiful species is common in rain-forest localities of the Atlantic slope, at 7,000 to 8,000 feet, and may often be seen in bloom there in December. The axillary flowers are very freely produced—they are a little over an inch in width, white, with reddish lip. It is a strong growing plant, but difficult to cultivate at lower levels, and is allied to O. Biolleyi.

Centre Staging.—When visiting an amateur's collection, about a year ago, I noticed how unsuitable was the centre staging of a span-roofed house. It was just like a long flat table, without any step-like structure to elevate the plants along the middle area. The plants on each of the side stages were in a healthy condition, for they were suitably placed at no unreasonable distance from the glass, and the hot-water pipes beneath kept the surrounding temperature about correct. But nearly all the plants on the central staging were situated at least ten feet away from the glass, which is too far in a town atmosphere, and there were no hot-water pipes beneath. The house is about 18 feet in width, and the heat from the pipes on either side rose quickly and passed well above the plants on the centre stage, so that they were always many degrees below the requisite temperature. As it was impossible to provide additional piping, the only remedy was to elevate the central stage, and this was carried out in step-like style so that all the plants were brought to a uniform distance of about four feet from the glass roof. The effect on the plants became rapidly visible, and they now flourish most satisfactorily. Their fine condition more than repays the extra trouble involved in having to stand on a box when using the watering pot.—"*Observer.*"

ROYAL HORTICULTURAL SOCIETY.

January 29th, 1924.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (hon. sec.), the Hon. Henry D. McLaren, Messrs H. T. Pitt, Fredk. K. Sander, J. Cowan, C. H. Curtis, Richd. G. Thwaites, J. Wilson Potter, and Jas. O'Brien.

AWARD OF MERIT.

Odontonia Sheila (M. Bleuana × O. Lambeauianum) ; from H. T. Pitt, Esq. A pleasing novelty, bearing an erect spike of four flowers, the segments flatly displayed, and marked with reddish colour. The labellum broadly developed and similarly coloured.

GROUPS.

J. J. Bolton, Esq., Claygate Lodge, Claygate, Surrey, was awarded a Silver-gilt Banksian Medal for a group of very fine Odontoglossums and Odontiodas. The former included mirum, a large flower almost covered with an uncommon brownish-orange colour, several fine forms of amabile and the handsome Corona. Od. crispum was represented by a pretty rose-tinted variety known as Nike, and a blotched variety carried a well developed spike of 16 flowers. Odontiodas were best in Colinge and Brackenhurst. Included in this exhibit were Cattleya Tityus, and a pleasing variety of Slc. His Majesty.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Banksian Medal for an attractive group containing in the centre a well-flowered example of Cœlogyne cristata and several rare species. Odontoglossums included the handsome crispum Zenobia, an old imported variety with thickly formed white segments of fine shape, Halli, and a bright golden form of waltonense. Cypripediums were best in Rossettii, while Masdevallias and the scarce Epidendrum Laucheanum were also noticed.

Messrs Cowan & Co., received a Silver Banksian Medal for a neat group in which several superb varieties of Brassocattleya British Queen and Blc Muriel occupied central positions. Odontiodas were represented by Margaret, and Charlesworthii, while Odontoglossums were well staged in Amethyst and Margarita. Cattleya Ultor carried a spike of three richly-coloured flowers, and C. Octave Doin was also good. Several Cymbidium hybrids occupied the back row.

G. H. Jones, Esq., Deddington, Oxon, exhibited Brassocattleya Gatton Lily, of pleasing colour, and with the lip purplish.

R. Gerrish, Esq., Milford House, Salisbury (gr. Mr. Sorrell), staged Odontioda Marietta, a handsome hybrid bearing a tall spike of eight flowers, reddish-claret in colour.

Messrs. Sanders exhibited Cymbidium Albatross, with an arching spike of ten flowers, ivory-white, shaded with emerald green.

February 12th, 1924.

Members of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), C. J. Lucas, S. W. Flory, H. T. Pitt, Arthur Dye, H. G. Alexander, J. E. Shill, F. K. Sander, H. H. Smith, Chas. H. Curtis, J. Cypher, A. McBean, J. C. Cowan, E. R. Ashton, G. F. Moore, J. Wilson Potter, Richd. G. Thwaites, and Fred. J. Hanbury.

The Chairman sympathetically referred to the great loss that horticulture had incurred by the death of Mr. Pantia Ralli, who had been a member of the Committee for many years. A vote of condolence was passed to Mrs. Ralli.

AWARDS OF MERIT.

Cymbidium Curlew, Westonbirt var. (Butterfly × Alexanderi); from Lieut.-Col. Sir George Holford, K.V.C.O., Westonbirt (gr. Mr. H. G. Alexander). A handsome hybrid bearing an arching spike of seven flowers, of golden colour tinged with green, the labellum bearing solid blotches of bright crimson-red on the side lobes as well as the apical area.

Miltonia William Pitt var. The Prince (Isabel Sander × Bleuana var. Reine Elizabeth); from Messrs. Charlesworth & Co. This seedling bore a couple of large flowers, the segments flatly displayed and heavily tinged with rich reddish-rose, the labellum having a darker basal mask and radiating lines.

Odontoglossum xanthinum (ardentissimum xanthotes × luteopurpureum Vuylstekeanum); from Messrs. Charlesworth & Co. A robust plant carrying a tall spike of 15 flowers, all the segments bearing numerous blotches and spots of bright yellow. The crest on the labellum clearly indicates the latter parent.

GROUPS.

Capt. Maldwin Drummond, Cadland Park, Southampton (gr. Mr. Lewis Smith), was awarded a Silver-gilt Banksian Medal for a beautiful exhibit, consisting of 16 specimens of Cœlogyne cristata, the largest bearing 64 spikes of white flowers. An interesting point was the comparatively small pots in which these plants had been cultivated. A Cultural Commendation was awarded to Mr. L. Smith for their exceptionally fine condition. In the centre of this exhibit was a well-grown plant of Dendrobium speciosum var. Hillii, with a couple of many-flowered spikes, and along the front portion were numerous Cypripediums, including a dozen examples of Maudiæ.

Messrs. Charlesworth & Co. received a Silver-gilt Banksian Medal for a

grand exhibit of beautiful Odontoglossums, noteworthy example being the bright yellow xanthinum, and superb varieties of white crispum. Odontiodas were well seen in Sir Douglas Haig and Ganesa, while Læliocattleyas were represented by Don Juan, a charming flower, and the attractive luminosa aurea. Dendrobium atro-violaceum was staged in several well-flowered plants, while Cœlogyne Mooreana and Odontonia Merope were both in fine form. Interesting crosses were seen in Vuylstekeara Aspasia and Lowiara Aurata (S. grandiflora × Bl. Mrs. Gratrix).

Messrs. Stuart Low & Co. were awarded a Silver Banksian Medal for an attractive exhibit containing the scarce Arpophyllum giganteum, with three erect spikes bearing numerous rose-coloured flowers, the pretty Dendrobium Bancroftianum, Phalænopsis amabilis, P. Schilleriana, and the elegant Dendrochilum glumaceum. A feature was the inclusion of several fine varieties of Lycaste Skinneri, while Cymbidiums and Brassavola hybrids were also good.

Messrs. Sanders secured a Silver Banksian Medal for an extensive display of Cymbidium hybrids, including Capella, Pauwelsii, Butterfly, and Ring Dove var. Purity. Among the Cypripediums were two handsome varieties of Cappamagna, and rarities were seen in Pleurothallis Rœzlii, Maxillaria luteoalba, Odontoglossum Eerstedii, with its charming white flowers, and the elegant Masdevallia Schrœderiana.

Baron Bruno Schröder, Englefield Green (gr. Mr. J. E. Shill) exhibited Calanthe Baron Schröder superba, a magnificent form, the tall spike bearing 25 flowers, also many buds, the colour being deep crimson-rose, Cypripedium Eurybiades was staged in three enormous flowers, named respectively The Baroness, Catherine, and Marga.

Sir George Kendrick, Whetstone, Edgbaston (gr. Mr. MacDonald) exhibited a selection of rare Orchids, their fine condition obtaining a Cultural Commendation and Vote of Thanks with the special appreciation of the Committee. In the group were two superb plants of Dendrobium Leeanum, a couple of the very rare D. Goldei, D. fibriatum, with numerous golden flowers, the rare D. Schutzei, with white flowers, the pretty little D. endocharis, Brassavola nodosa, with a dozen flowers, and Vanda teres var. Macdonaldii, a nearly white form.

A. P. Cunliffe, Esq., Woodford, Salisbury, exhibited Cymbidium Alexanderi var. Druid, with a tall spike of 7 large flowers, ivory-white. slightly spotted on the lip. A very pleasing and handsome variety.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), staged Dendrobium speciosum fusiforme, a finely grown plant with eight many-flowered spikes, Lycaste Skinneri alba var. Purity, a beautiful flower, and two examples of Brassocattleya Gatton Lily, the variety magnifica having two large flowers, and the variety majestica bearing four white blooms.

Messrs. Flory & Black staged Sophrolæliocattleya Prince of Orange, a charming flower of orange-yellow colour, also Cattleya G. P. Walker, C. Octave Doin, of an unusually rich colour, C. Dr. M. Lacroze, of model form, and fine examples of Cypripedium Etta and C. Odin.

CORRECTION.—In our list of New Hybrids, p. 52, the second parent of Brassolæliocattleya Crescent should be Lc. Ceres instead of L. Ceres, aud in Sophrolæliocattleya Apache the second parent should be Lc. Nemea, not Sc. Nemea.

"GARTENSCHÖNHEIT."—The issue of *Gartenschönheit* for January is rendered particularly attractive by the inclusion of several articles dealing with Orchids. Mr. Camillo Schneider contributes "The Wonder of the Orchid Flower," accompanied by eight finely produced illustrations. Mr. Hermann A. Sandhack writes on "Orchids in the Tropics and in Glass-houses," and Mr. Siegfried Decker on "Orchids in Brazil." There are in addition four coloured plates of Læliocattleyas.

TEMPERATURES.—The sun is fast gaining power; the atmosphere of each department becomes nicely warmed without the aid of much heat from the hot water pipes, and the growing season may be said to have fairly commenced. Under these conditions the temperature may now be raised to the following figures:—

Cool House.—Day, 55° to 60°; night, 53°; morning, 48°.

Intermediate House.—Day, 53° to 68°; night, 63°; morning, 58°.

Warm House.—Day, 70° to 75°; night, 68°; morning, 65°.

The above figures will serve as a guide, but we must take into consideration that this month is, perhaps, the most difficult of all in which to maintain a steady and regular temperature. Sometimes the bright sun causes the thermometer to indicate a much higher degree than recommended, but this will do no harm, being preferable to the admission of too much air; which is at this period very searching. On the other hand, in the absence of sun, the weather may sometimes be wintry, and then I would advise a temperature a few degrees below that quoted.

Damping down about three times a day in all departments will now be necessary, for the fire heat by night, combined with the sun by day, which is generally accompanied by drying winds, soon causes the atmosphere to become too dry, unless the precaution of damping down be taken. But do not sprinkle a little water on the floors and think that sufficient; do it thoroughly well, by saturating between the pots, the stages, the walls, the floors, and in fact every space that can be damped without wetting the plants overhead.—*J Mackay, March*, 1905.

THE ORCHID CLUB.

THE meeting of the Orchid Club held at the Houldsworth Hall, Manchester, February 1st, was noteworthy for the large number of species exhibited by various members and by Messrs A. J. Keeling & Son illustrating the communication given by Mr. B. J. Beckton on the so-called Botanical Orchids.

Mr. Beckton advocated and established a good claim for the more general cultivation of a selection of species of various Orchid genera, pointing out the surpassing interest of their habit, culture and morphology, as well as the exquisite beauty and character of the inflorescence of many.

The importance of maintaining in cultivation representatives of the various genera was warmly supported by Professors Weiss and Lang, not only for their interest and intrinsic beauty, but also for the purpose fo investigation and instruction.

Premier Diploma.

Cypripedium Mrs. William Pickup (Aisne var. Thisbe × Alcibiades illustre), from Dr. Craven Moore. A large well-proportioned flower, the dorsal sepal 3½ inches trans diameter, orbicular in form, slightly concave, white with a dark crimson (C. de C. 578) luna fading upwards into the white ground, leaving a broad white margin slightly goffered. The petals are broad and well displayed, yellowish-green flushed with crimson and a well defined yellow edge, the pouch is similarly coloured.

Diploma of Merit.

Cypripedium Olympus var. The Chairman, from B. J. Beckton, Esq. A large flower suggesting a large and refined form of Alcibiades. The dorsal sepal 3 inches trans diameter, square, white with a green luna and lines of small crimson spots radiating up into the white ground. The petals well displayed, green, flushed with crimson. The pouch is similarly coloured.

The following new hybrids were submitted for registration :

Cypripedium Thisbe Beckton (Aisne var. Thisbe × nitens-Leeanum var. Becktoniæ), from Dr. Craven Moore.

Cypripedium leightonense (Earl of Tankerville × nitens-Leeanum var. Becktoniæ), from Dr. R. N. Hartley.

Groups.

Fred Hardy, Esq., Ashton-on-Mersey (gr. Mr. C. Branch), staged a group of Odontoglossums with full spikes, each plant being an example of the magnificent culture for which this collection is noted. It included several plants of O. crispum xanthotes, crispums of the Doinii type, and coloured hybrids of great excellence.

B. J. Beckton, Esq., Irlams-o'-th'-Height (gr. Mr. W. A. Stewart), showed a group of Cypripedium Becktoniæ intermixed with various

Botanical Orchids, the central plant being a fine example of Goodyera discolor; other species were Arachnanthe Clarkei, Saccolabium bellinum, Ipsea speciosa, Odontoglossum Oerstedii, and various Masdevallias.

A. T. Cussons, Esq., Kersall (gr. Mr. F. Cookson), staged a group of mixed Cypripediums, including a fine variety of Selenipedium calurum, a well-flowered plant of Gomezia planifolia, Lælia harpophylla, and the beautiful Zygocolax Veitchii.

Dr. F. Craven Moore, Manchester, exhibited a selection of Cypripediums, including Noel, a modern flower, the dorsal sepal white with a green luna and a few crimson spots; waltonense magnificum, a well-set flower of good proportion; a beautiful plant of Viking, and Prince Albert, Chardwar var.

Dr. R. N. Hartley, Wigan, staged a nice group of Cypripediums, conspicuous among which were Nubian, the flat dorsal sepal being of a rich mahogany crimson; the new leightonense; and Mrs. Rickards var. Roy Hartley. Well-grown plants of Cœlogyne cristata made a beautiful edging.

J. H. Walker, Esq., Eccles (gr. Mr. G. Weaver), showed a fine group, including Cypripedium Nandii: Hera, Carter Place var.; Lady E. James, with well-flowered plants of Dendrobium nobile and some good varieties of Odontoglossum crispum.

W. Morton Jackson, Esq., Wilmslow, staged Lycaste Skinneri var. Knaresborough, L. plana, and a magnificent plant of Masdevallia Schrœderiana.

Messrs. A. J. Keeling & Son put up a large exhibit, in which were included several fine Cypripediums and Odontoglossums, also Odontiodas. A feature was the number of rare species, such as Megaclinium robustum, Bulbophyllum Peachei and Masdevallia Gargantua.

MANCHESTER ORCHID SOCIETY.

February 15th, 1924.

MEMBERS of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Evans, G. Giles, Capt. Horridge, J. Howes, A. Keeling, D. Losh-Thorpe, E. W. Thompson, and H. Arthur (secretary). Mr. J. Thrower was also invited to sit.

First-class Certificates.

Odontoglossum Dodeham var. Perfection (harvengtense × Phillipsianum), a large flower of fine formation, sepals and petals yellow, blotched with chocolate, lip white with chocolate markings; from S. Gratrix, Esq.

Cypripedium Marne, West Point var., an immense flower of good shape, dorsal sepal 4ins. across, green base with ruby spotting and a broad white margin; from S. Gratrix, Esq.

Miltonia Wm. Pitt var. The Prince, a very pleasing flower, sepals and petals claret-red, large lip of paler shade, the basal mask prettily rayed; from Capt. W. Horridge.

Odontoglossum luridum, Loshville var. (Harryanum × Olympia), a massive flower of rich mahogany brown, large broad lip, white with reddish brown markings; from D. Losh Thorpe, Esq.

Odontioda Coronation, Haddon House var., a beautiful form with large flowers; from P. Smith, Esq.

AWARDS OF MERIT.

Cypripedium Sir Wm. Chance var. Viking; Cyp. Fred. Wm. Sander; Odm. Her Majesty var. Rubrie; Odm. crispum var. James Wood; from S. Gratrix, Esq.

Odontoglossum Pharo (parentage unknown); from Mrs. Gratrix.

Cymbidium Diana var. Pandora; from Capt. W. Horridge.

Læliocattleya Minos var. Rubens; from P. Smith, Esq.

Cypripedium Cappamagna var. Fred. Sander; from Messrs. Sanders.

AWARD OF APPRECIATION—FIRST CLASS.

Cypripedium Golden Wren; from S. Gratrix. Esq.

CULTURAL CERTIFICATES.

Mr. J. Howes, for Odm. Dodeham var. Perfection and Odm. Pharo.

Mr. A. Coningsby, for Cymbidium Diana var. Pandora.

Mr. E. W. Thompson, for Odontioda Coronation, Haddon House var.

GROUPS.

A Gold Medal was awarded to A. Hanmer, Esq., Buxton (gr. Mr. G. Giles), for a group of Cypripediums in great variety, including Vashtii, Ursus, and Eileen Hanmer; Odontoglossum of the crispum section, several choice Odontiodas, and others.

A Silver-gilt Medal was granted to S. Gratrix, Esq. (gr. Mr. J. Howes), for an excellent exhibit of Cypripediums and Odontoglossums.

Mrs. Gratrix exhibited Odm. Pharo and Cyp. Ballet Girl.

A Large Silver Medal was awarded to Messrs. Cowan & Co. for a group containing fine varieties of Cattleya Tityus, Hassallii alba, Octave Doin, several attractive Dendrobiums, as well as some fine Cymbidium hybrids.

A Large Silver Medal was granted to Messrs. Cypher & Sons for an interesting exhibit containing some fine Cypripediums, varieties of Lælia anceps, various Cœlogynes and good Cymbidiums.

Messrs. Sanders staged various Cymbidiums and other attractive hybrids; Messrs. Charlesworth & Co. showed some interesting hybrids, including the new Lowiara Aurola; Messrs. A. J. Keeling & Sons staged various Cypripediums of merit; Mr. J. Evans exhibited Cypripediums, some promising Miltonias and Odontiodas; and Mr. D. M. McLeod staged Cypripedium Desdemona Haddon House var., and others.

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Founded in 1893 by R. A. ROLFE, A.L.S.

Edited by GURNEY WILSON, F.L.S.

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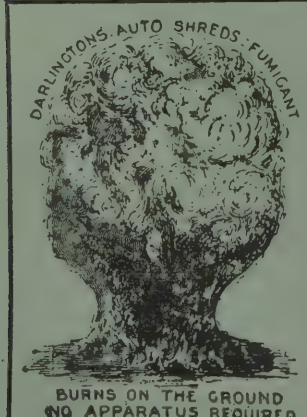

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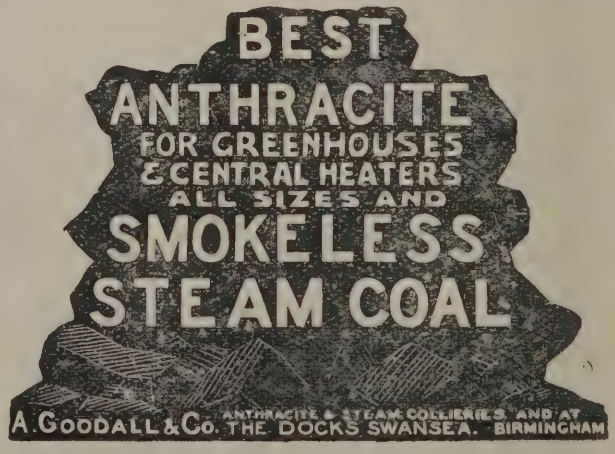

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THE ORCHID REVIEW.

VOL. XXXII.] APRIL, 1924. [No. 370.

NOTES.

ORCHID CULTIVATION IN AUSTRALIA.—Although we are all more or less amateurs, we have some very fine plants, mostly Cattleyas, Læliocattleyas, Brassocattleyas, Sophrolæliocattleyas, and are up to date as regards the latest hybrids. The growers are not in a very large way, the collections ranging from 300 to 500 plants, but what is lacking in quantity is made up in quality. Cattleyas and their allies seem to like our climate and generally do well. Odontoglossums grow here in an ordinary fernery. At a recent meeting of the Australian Orchid Club, a paper by Mr. Baxter Cox on Orchid Culture was greatly appreciated.—*D. J. W. Chandler, E. Malvern, Victoria, Australia.*

ORCHID CULTIVATION IN ASSAM.—I have made many trips up into the Bhutan Himalayas this cold season, and have made some very interesting collections. My bush house is now a blaze of colour, most of the Dendrobiums and many Vandas being in flower. I have had Dendrobium nobile in flower since December 8th, also D. aureum. Others in flower, or just about to open their buds, include D. infundibulum, Wardianum, densiflorum, chrysotoxum, thyrsiflorum, Pierardii, crassinode, crepidatum, fimbriatum and its variety oculatum, as well as Vanda Bensonii and Amesiana. My Cœlogynes have been very fine this winter. Being in the home of East Indian Orchids, I intend hybridising some of them during the current year.—*G. Lindley Hinde, Kamrup, Assam, Feb. 11th*, 1924.

R.H.S. CLASSES FOR SMALL AMATEURS. — Recent correspondence suggests that the aims of the Royal Horticultural Society are not always fully understood, and that it is only the large and important growers of Orchids who are welcomed at the fortnightly meetings. Such, however, is not the case, for during recent years medals have been awarded to comparatively small groups. In fact, so long as a group contained at least a dozen plants, and that these were fairly well cultivated, there has seldom been an occasion on which a medal has not been given. Quality, of course, tells most in the nature of the group, and intending exhibitors should note

that a dozen plants of character will be better appreciated than a larger number of inferior varieties that have been poorly cultivated. It has been said that even an ordinary variety looks well when grown into a fine specimen, and such is certainly the correct view when a plant with healthy foliage and an unusual number of flowers is properly staged. Skilful cultivation is often rewarded by a Cultural Commendation, and in exceptional cases by the bestowal of the Lindley Medal.

ARPOPHYLLUM GIGANTEUM.—An Orchid that possesses character may be selected in Arpophyllum giganteum, and at recent R.H.S. Shows it was on this account appreciated by enthusiasts. The exhibitors were Messrs Stuart Low & Co., who managed to stage the plant with several erect and many-flowered spikes. The generic name is derived from the Greek for sword-leaf, in allusion to the shape of the foliage. A. giganteum was discovered by Hartweg, as long ago as 1839, and introduced by him to the garden of the Horticultural Society. It is a native of Mexico and Guatemala, occurring on the mountains and hills in isolated patches that are frequently remote from each other. Rœzl met with it in immense masses on the trunks and branches of trees, at the summit of certain mountains. The plants were exposed from October to March to the violent storms which occasionally blow from the North, and, it is said, with such force, that a man can, with difficulty, keep on his feet.

CYPRIPEDIUMS FOR A WARM CLIMATE.—An amateur living in the Tropics asks for a list of suitable Cypripediums. This is an easier matter than in the case of an amateur requiring Cypripediums for a cool house, for while only a few kinds can be successfully grown under cool conditions, a very much larger number succeed admirably in a high temperature. Plants that come from countries possessing a warm climate are of course eminently suitable, but even the well-known C. insigne submits willingly to a temperature that is much above that of its native home. When the cool-growing Cypripediums are submitted to higher temperatures, the growth is usually more rapid, and generally attains larger dimensions, but the flowers do not appear to be appreciably altered. It has been stated, and by experienced men, that C. Fairrieanum is always much darker in colour when grown under cool conditions. The main secret in the successful cultivation of Cypripediums is abundance of atmospheric moisture and adequate protection from the direct rays of the sun. A good light is essential, but sunlight should only be allowed to fall on the foliage when there is no chance of it burning the leaves, that is, in the early morning, late in the day, and in the depth of winter; at all other times shading is a necessity.

THE DISTRIBUTION OF AUSTRALIAN ORCHIDS.

UNDER the above title, the Royal Society of South Australia publishes (*Trans. xlvii.*, 1923) a paper read by Dr. R. S. Rogers, M.A., on October 11th, 1923. In the introductory remarks it is stated that the distribution of the Orchidaceous flora of Australia is chiefly coastal in character, the greater portion of the interior of the continent being too arid to support vegetation of this type. An annual rainfall of at least ten inches would appear to be essential for the maintenance of all but a few members of the family.

The family is represented in Australia by 64 genera and about 450 species. Nineteen of the former are epiphytal and also nearly a fourth of the latter. The vast majority of the terrestrial forms belong to the tribe Neottieæ, the other tribes being poorly represented by a few small genera. Compared with the dense Orchid population of New Guinea and some other countries, this flora cannot be considered a rich one.

Dr. Rogers' reasons for stating that the flora is of exotic origin are that, so far as it has been investigated, the Orchid flora of tropical Australia bears a very close relationship with that of Southern Asia, and particularly to that of the Malay Peninsula and New Guinea. From North-western Australia only three Orchids have so far been reported. The three genera to which they belong are to be found in Asia. The Northern Territory has disclosed up to the present only 12 genera and 22 species. Eleven of the former are to be found in the Malay Archipelago or in New Guinea. The same thing happens in the case of tropical Queensland, where out of about 53 genera no less than 41 are in common with New Guinea or the Archipelago, and usually with both stations. Thus out of 64 genera which constitute the Orchid population of Australia, 43 are known to exist in the above stations, about 22 of the species appear to be conspecific, and others have close relationships.

It is also somewhat surprising, adds the author, that situated so closely as we are to the great developing centre for Dendrobium and Bulbophyllum in New Guinea, we should not be better represented in species belonging to these prolific genera. At least 500 Papuan species of each of them have been described, and yet in the whole of our continent, there have only been recorded 48 species of Dendrobium and 16 of Bulbophyllum.

Until recently the genus Corysanthes has been considered a true Australian type, hence the following paragraph is worthy of being quoted in full. Dr. Rogers states : " Until recently this genus was known to the botanical world by less than a dozen species scattered over our Commonwealth and New Zealand, together with four presumable emigrants resident in Java. To-day we must re-adjust our views. Close on 50 species are now

known, with apparently a propagating centre in New Guinea, from which station 21 species have already been described. It has also been reported from the Himalayas, from several islands in the Malay Archipelago, from the Celebes, the Philippines, and three from the South Sea Islands. The range of these delicate little plants is thus seen to be great, extending from a little below the Tropic of Cancer to Stewart Island (New Zealand), situate about the 47th parallel of south latitude. Of the eight species which are natives of New Zealand, only one is conspecific with a species in Australia. A characteristic feature of the endemic species of the Dominion is to be found in the long filiform lateral sepals and petals. This is not present in any known Australian species, but is seen in two of the Javanese species, and also in some of those recorded by Schlechter, J. J. Smith, and Ridley, from New Guinea. It is curious that the development of this genus should be greater within the narrow confines of New Zealand than on our own continent."

Regarding the endemic flora, Mr. Rogers states that "By far the best developed of the endemic genera is Diuris, comprising 25 species, well represented in all the States of extra-tropical Australia, and in one instance penetrating into the tropics as far north as the 18th parallel of latitude. Some of its members are adapted to very variable conditions of soil and climate, one having been recorded even from the great Victoria Desert in the west. It hybridizes easily and propagates freely, both by cross-pollination and by the vegetative method. It is singular that a genus having such admirable properties for dispersion should not have been reported from any station outside Australia. Its gynostemium approaches rather nearly in its fundamental structure to that of Thelymitra, and the only apparent advantage possessed by the latter genus is that it includes among its members some self-pollinating species, while Diuris has none. Yet Thelymitra has migrated as far into the tropics as the Malay Archipelago and the Philippines, and certain of its Australian self-pollinating species are to be found in New Zealand and New Caledonia. Diuris is an exceedingly characteristic and virile genus, and finds its best development in New South Wales, where it is represented by 17 species."

This admirable paper is interspersed with numerous tables that are well worthy of close study, and the whole forms a most valuable addition to our knowledge not only of the distribution, but of Australian Orchids in general.

HABENARIA FOLIOSA.—This species, which is the subject of a coloured plate, t. 130, in a recent issue of *The Flowering Plants of South Africa*, has a wide range of distribution. In Basutoland the natives call it "Mametsana," meaning "the mother of the small water." The spur contains a watery substance which becomes jelly-like on exposure to air.

X CEPHALANTHERA SCHULZEI.

THE following interesting note on this very rare natural hybrid between *Cephalanthera ensifolia* and *C. grandiflora* (pallens) may be of interest to English readers, as both parents are natives of Britain. The hybrid might therefore occur in any locality where they grow together. It was published in the Bulletin de la Société Botanique de France, Tome 70, p. 451-453 (1923). The accompanying figure is reproduced through the kind permission of Mdlle. Camus, and the courtesy of the Society in question.

X CEPHALANTHERA SCHULZEI.
G. Camus, Bergon & A. Camus.

"*X Cephalanthera Schulzei* G. Camus, Bergon et A. Camus, Monographie des Orchidées d'Europe, p. 439 (1908), is a hybrid so far seldom seen between *C. ensifolia* and *pallens*. First described by Max Schulze (Œst. Bot. Zeit. XLIX., p. 299, 1899) as *Epipactis alba* (*C. ensifolia*) × *latifolia* (C. pallens), this hybrid does not appear to have been yet figured.

"The rarity of C. Schulzei may be due to two causes: *C. ensifolia* and *pallens* are seldom found together in the same locality, and self-fertilisation very often occurs in the case of *C. pallens*, according to the observations made by M. Godfery (Journ. Linn. Soc. Bot. p. 511, 1922).

"*X C. Schulzei* has been recorded for Haute-Savoie on the Salève (Dutoit-Haller); for the Alpes Maritimes, at Vence, under the oaks on the Baou-des-Blancs, a little below the ruins of Les Templiers (A. Camus, Riviera scientifique, p. 19, 1919); and for Thuringe, at Eisenberg (Ludewig).

"In 1922, I found two well-marked examples of this hybrid, in the midst of the parents, at Grimaud (Var), in an oak wood to the left of the Garde-Freinet road. It is one of these specimens which I have here figured.

"These vigorous hybrids have numerous flowers. The leaves recall those of *C. pallens*, but are a little closer together, the lower ones rather recurved, the upper more erect. The four or five lower floral bracts are very large, the others rather short. The flowers are rather larger than in *C. ensifolia*, the divisions of the perianth quite intermediate in form, the exterior more obtuse than in *C. ensifolia*, and a little less so than in *C. pallens*, the lateral interior shorter and more obtuse than the exterior. The ovary bears somewhat rare very short glandular hairs. The ovary of the two parents is sometimes wrongly described as quite glabrous. It is always provided with rare, short, 2-3 cellular hairs, with an oval or nearly globular glandular head."

The occurrence of this hybrid affords clear proof that the flowers of both *C. ensifolia* and *C. grandiflora* are occasionally visited by one and the same insect, probably *Bombus lucorum*, which I had the good-fortune to see visiting the flowers of *C. grandiflora* on June 17th, 1919 (Journ. Bot. p. 360, 1922) in Surrey. *M. J. Godfery.*

ONCIDIUM FORBESII.—This handsome species was recently exhibited by Messrs. Sanders, with a fully developed spike of attractive flowers. The segments are bright chestnut-brown, bordered with golden-yellow, hence it is sometimes called the "Gold-laced Oncidium." It was discovered by Gardner on the Organ Mountains in 1837, and sent by him to the collection of the Duke of Bedford at Woburn, where it flowered during the following year, and after whose gardener, Mr. Forbes, it was named by Sir William Hooker.

HÆMARIA DAWSONIANA.—Although this species is not often seen in cultivation, it possesses several attractive features, notably the handsome foliage of deep olive-green colour, with copper-coloured veins, and the erect spikes bearing many white flowers, the apex of the column being orange-yellow. The genus is allied to Anœctochilus, but the sac of the lip is concealed between the lateral sepals, otherwise the genera are exceedingly alike. It was introduced by Mr. Stuart Low, and in 1872 described by Reichenbach as a variety of H. discolor, which is now regarded as a distinct species. The flowers open early in the year and last a long time in perfection. Several good examples have recently been seen at their best in the collection of Sir Jeremiah Colman, Bart., Gatton Park, Surrey, where Mr. Collier intends raising a batch of them by home-produced seed.

DENDROBIUMS.

By a Practical Orchid Grower

THE genus Dendrobium is one of much importance, including as it does many of the most beautiful of Orchids. There are a great many species known to collectors, and in cultivation; while some have florally little value, and others are rather difficult to grow, there are left probably two dozen species worth the attention of amateurs, a dozen being of the first importance. We next have a good many varieties that are worth collecting and propagating. In nobile alone there are available many fine varieties, such as nobilius, larger and many shades richer than the type; virginale, the pure white variety; some delicate intermediate varieties of better shape than the type, such as nobile Amesiæ, n. Ballianum; and large flowers of good shape and typical colour, as in n. Harefield Hall and n. Thwaitesii. All these are worth collecting where they can be discovered, for remember, they are the pick of the thousands of plants of nobile that were imported over twenty years ago.

When we have made our pick from the best species and the best varieties of the species, we still have left the hybrids, and in these there is much of importance, about which I shall have more to say presently.

While there are dwarf Dendrobiums that, out of flower, have none of the general characteristics of the genus, as, for example, D. Cœlogyne, a Dendrobium is usually readily recognised by the long and comparatively slender pseudo-bulbs and the swollen nodes. These nodes are of much interest, as it is from them that the flowers spring, or, on occasion, leaves are produced, as we shall find when we speak of propagation; in fact, these nodes have buds that are in some measure under the control of the cultivator.

There are Dendrobiums that are golden-yellow, but the majority have more or less white segments tipped with shades of rose or amethyst-purple, and with lips in harmony. There is even one with blue-tipped segments in the now scarce Victoria Regina.

Two of the most useful and beautiful of all the Dendrobiums are Wardianum and Phalænopsis. The former has large flowers of good substance, white, richly-tipped segments, the lip having a deep yellow disc with two dark blotches. It grows and flowers freely during the first few years after importation, and then demands good cultivation. The latter throws apical spikes of fine flowers that are most useful for cutting; in colour ranging from pure white to deep rose-magenta; it is one of the most variable, and there are many named varieties of superior quality. D. superbiens resembles in general habit Phalænopsis, and there is a very pretty hybrid between the two named Leeanum. Leeanum first appeared as a natural hybrid, but has since been raised in gardens; many noteworthy

varieties have appeared during recent years in the Imperial Botanic Gardens in Japan.

Two of the most curious species in the genus are Brymerianum and Harveyanum, the former in particular being very beautiful. Both are golden-yellow and both have beards, in the former on the lip, as in Brassavola Digbyana, and in the latter on the petals. D. Harveyanum is now rarely seen. Many attempts were once made by hybridists to introduce the beard and colour into other species, but with only limited success; there is still work waiting to be done here.

Densiflorum and thyrsiflorum have much in common, and there is nothing more beautiful than these plants in flower. The former, as the name conveys, has the flowers symmetrically arranged in dense pendulous clusters. The sepals and petals are soft yellow and the lip orange. In the latter the sepals and petals are white or flushed and the lip golden orange. Farmeri also is in the way of the above two.

Formosum, infundibulum and Jamesianum belong to the same type. All have black hairs on the pseudo-bulbs, and all have the same kind of white flowers, there being variations of colour on the lips, yellow in infundibulum and formosum, and dull red in Jamesianum. Formosum, coming from Burma, requires more heat than the others, and is quite a cheap plant to import. Dearei is a beautiful white species, probably the whitest of all, as the centre of the lip is pale green.

Dalhousieanum is among the giants of the genus, the stout pseudo-bulbs reaching to as much as five feet in height, and to many this must remain an objection. Its flowers, produced on loosely arranged racemes, are dull yellow, slightly flushed, and the lip is large, with two dark blotches. There is a variety of this, a better yellow than the type, named luteum, and there are several hybrids from it, all being strongly marked with the individuality of this giant species, including the size of its bulbs.

D. aureum and signatum are both yellow species, the former very sweetly scented, and in a way rather unpretentious, the latter a slightly better yellow, but in itself rather insignificant. These two, however, I bracket together, as they have between them been the parent species of a long series of fine hybrids, including the finest yellow hybrids and many a fine coloured one. Both are moderate in size and floriferous, and these excellent traits are found in their hybrids.

Findlayanum is a pretty species that once was plentiful and entered much into hybrids. It is distinct, and easily recognised out of flower by its nodes being much swollen, even for a Dendrobium. The flowers are white, tipped with pink, and the lip is large with a yellow disc. There are many more excellent species not mentioned here, but those detailed are among the best.

The Dendrobium hybrid once held a very high position as a choice Orchid. This was before a blotch on an Odontoglossum crispum petal made buyers think in four figures, and when the possibility of reproducing these blotched forms from seed was doubted. The Dendrobium enthusiasm waned while

DENDROBIUM NOBILE VIRGINALE.

the Odontoglossum enthusiasm waxed, and the expert hybridiser turned from the former to try his hand at the latter. We all know the result in the wonderful work that has been done in Odontoglossums, for to-day everyone may have coloured Odontoglossums at a modest price. The

Dendrobium is too good an Orchid to remain side-tracked like this, and for some time there has been increasing evidence that it is to rise again in popularity.

It is pleasant to remember the old hybrids and to see them again. They are like old friends that the years have not changed. Ainsworthii (nobile × aureum) had many named varieties that were propagated and thought much of, and so had Euryalus, better known as rubens (Ainsworthii × nobile). Cybele (Findlayanum × nobile) was distinct in bulb and flower, and forms of it were named after the variety of nobile parent used, thus Cybele elegans, C. nobilius. Chlorostele (Linawianum × Wardianum) masqueraded under many names, Juno and Owenianum will be remembered. Wiganæ (nobile × signatum) was a pretty amber-coloured hybrid with a dark disc, and is notable as being the parent of the two best yellow hybrids, Thwaitesiæ and Chessingtonense. A group of D. Thwaitesiæ was shown in fine condition by the late Mr. F. M. Ogilvie on one or two occasions that will always be remembered by those who saw them. This plant, Thwaitesiæ, has an exceptionally fine constitution, and is not difficult to propagate. It was raised from Wiganiæ crossed with Ainsworthii, and proved to be the only fine yellow seedling out of the batch, the others being coloured. Some of the Chessingtonense seedlings were even of a better colour, but being half aureum they were never such good growers, and on that account never became so imposing. The parentage is Wiganæ × aureum. There used to be many fine varieties of murrhiniacum, popularly known as Euterpe (nobile × Wardianum), Rolfeæ (nobile × primulinum), Schneiderianum (aureum × Findlayanum), Venus (Falconeri × nobile), and many others that the Orchid grower of twenty of more years ago took a pride in growing.

In the above notes I have spoken of these plants as things of the past, but no doubt many specimens of them are still to be found in collections outside the trade. Messrs. Cypher, of Cheltenham, are likely to have most of them, and Sir Jeremiah Colman has remained constant to the Dendrobium, many new and fine hybrids having appeared at Gatton Park in comparatively recent years.

DENDROBIUM CULTURE.

Like all Orchids, the Dendrobium must be well grown to be seen at its best. Nearly all Dendrobiums flower in the early spring, but if they are grown in some quantity flowers will be obtained during several months, say from January until April. Formosum giganteum flowers in the autumn.

We still speak of stove, intermediate and cool-house temperatures, and stove treatment is usually that allotted to the Dendrobium. The word "stove" is at once unlovely when spoken of in connection with Orchid growing, and, more, it is misleading. To get a good bulb on a Dendrobium

it must have plenty of heat, but it is the heat given by the sun during the growing season.

As these cultural notes are intended to be a guide for the year, I shall endeavour to follow the plant through the seasons from this month. We shall take a plant in good health that is now presumably in flower. This plant should have now a minimum night temperature of 55-60°, a higher temperature fluctuating with the weather will be congenial to the plant. As it will be desirable to keep the flowers from spotting by condensation, a brisk warmth in the pipes will keep the air in circulation. When a plant is weakly, the leading and flowering bulbs will shrivel, and the flowers should be cut at once, for a weakly Dendrobium will sometimes throw quite a lot of poor flowers. It will be observed that at the base of the leading bulb the leaf buds will be swelling, or they may even already be breaking away into young shoots, but this does not mean to hasten with the repotting. When these shoots are several inches in length they throw out new roots, and this is the time to repot. The potting mixture may be composed of osmunda and other fibres to which, say, a third the quantity of sphagnum is added. The fibre must be well cleaned, and some of these fibres require a lot of cleaning before they are relished by the Orchid roots. But this clearing away of dust, which when wet becomes a sticky clay, makes for sweetness and health.

Before we repot our plant, one or two considerations crop up. Nearly all Dendrobiums flower on the bulb made the previous year, so that the leading bulb is not the flowering one. The bulb behind this year's flowering one will have flowered last year, and so on. It will thus be seen that these back bulbs have had their day, and the question arises: Are they of any further use to the plant? This question has been discussed before, and I am prepared to say that three completed bulbs are quite enough behind one leading bulb of any Dendrobium of the nobile-aureum-signatum section. There is no more pitiful sight than a ragged plant with an array of shrivelled back bulbs which are lingering on and relying for their sustenance on the lead or growing part, which alone has roots. Mr. James O'Brien once very aptly described these back bulbs as paupers living on the working part of the plant and weakening it.

There is, however, another plant to consider, the one that has numerous back bulbs that are plump and add importance to the size of the plant. Should these back bulbs be cut away? If the plant when knocked out of the pot proves to be well rooted and in sweet material, one would be ill-advised to cut it up and spoil a specimen. The point is that numerous flowered and spent bulbs behind each lead are of no benefit to the plant, and may be even injurious, and any importance they convey by making the plant larger is illusory. (*To be continued.*)

AN ORCHID EXPEDITION TO CENTRAL AND SOUTH AMERICA.

ANY reliable information regarding the conditions under which Orchids grow naturally, as well as the means adopted to collect and despatch them to gardens, is of considerable value to Orchidists. Last year, an expedition to Panama and Colombia was undertaken by Mr. George H. Pring, Horticulturist to the Missouri Botanical Garden, and to him we tender our sincere thanks for kindly granting permission to reprint from the Garden *Bulletin* the following account of his successful journey.

The Orchid collection of the Missouri Botanical Garden has always been a notable one, and after the acquisition of the Brownhurst collection, through the generosity of the late Mr. D. S. Brown, it took first rank in this country for the number of varieties as well as quantity of plants. The annual Orchid show held during January and February has attracted wide attention, and its inclusion in several moving picture circuits, both national and international, has been a most effective means of advertising St. Louis and the Garden.

The general public is apt to judge such an exhibition from the standpoint of colour and quantity of bloom rather than the rarity of the plants, and for this reason it seemed desirable if possible to augment considerably the number of more showy Orchids, especially Cattleyas. During the war, however, practically all the collectors of Orchids, particularly in South America, went out of business, and it is no longer possible to buy these native plants through local agents. Consequently, the only way in which they can be obtained is to send a representative direct to the country where these particular Orchids are grown, in the hope that by a fortunate combination of circumstances, he may secure enough of these plants to make the trip worth while.

Another factor which has greatly restricted the importation of native Orchids into the country has been the restrictions imposed by the Plant Quarantine Act, and indeed it was not possible to consider securing Cattleyas from South America until this difficulty was overcome. However, because of the standing of the Missouri Botanical Garden, the Federal Board granted a special permit, allowing Orchids collected in South America and Panama, to enter at New Orleans and come direct to St. Louis, where they could be inspected, instead of following the usual regulations. If such an arrangement had not been made it would have been useless to undertake the planned expedition, but with the way clear for the delivery of the plants to the garden, Mr. George H. Pring, Horticulturist to the Garden, began at once to make preparations for the trip.

Early collectors of Orchids in Colombia, such as Schlim, Blunt, Linden,

the Klaboch brothers, Chesterton, Lehmann, and Kalbreyer, had no difficulty because of the abundance of accessible plants. During these easy-collecting days, the commercial Cattleya was found growing upon houses and in forests close at hand. In Yacopi, in the Departamento Cundinamarca, the villagers even presented a collector with forty cases of plants. A present-day collector, however, must rely upon the natives exclusively, making his headquarters at the nearest village and waiting with all the patience at his command for the return of the natives with the coveted Orchids. During this time he has abundant opportunity to become familiar with the native food, which consists of bananas, prepared in various fashions, the yuca (Manihot roots), sun-dried fish, and last but not least, the native meat, taking the usual chances with ptomaine poisoning and dysentery.

Boxes must also be prepared for the possible shipments. This usually involves cutting trees, from which boards are made by crude native methods. These packing crates are of standard size, 46 × 46 × 75 cm., and for ventilation spaces are left between the boards and occasionally bamboo strips are used on the ends. When the plants arrive they are cleaned, cutting away any surplus back pseudo-bulbs or waste material, then dried thoroughly before packing. The plants are put into the cases as tightly as possible, no packing material being used, each box holding ten arrobas, or 250 pounds. This weight diminishes during transportation to St. Louis to about six arrobas or 150 pounds.

The best time for collecting Cattleya Trianæ, according to Cyril Allen, of Bogota, is during the dry season (November to March). The flowering season, "Varanillo" (little dry season), which is from the end of July to September, is then over, and if collecting is done during this period it is possible to select the best types. Cattleyas do not grow in the hot country, but in the foothills of the Cordilleras, from 2,000 to 6,000 feet altitude, where the mean temperature is 65-67 degrees F. Most Cattleyas are entirely local in their distribution, certain species being confined to a small given region and disappearing completely when this area is passed. They inhabit the topmost branches of the Aquapa (Bombax), 150-200 feet in height, where there is plenty of sunlight. Even in the dry season they are subjected to heavy dews at night, which more or less prevents shrivelling. Cattleya Mendelii has been found growing upon rocks too hot for the naked hand, suggesting that most Cattleyas need abundant sunshine.

Cattleya Percivaliana grows much better upon rocks and cliffs overhanging streams than upon trees. Other Cattleyas, such as C. Trianæ, prefer the topmost branches of trees. They may be found in either the crotches or branches, upon the sides of the main trunk, or in many cases surrounding the limbs of the smaller branches where their roots tenaciously

hold them fast against the strongest wind, often making it necessary for the natives to pry the plants loose, with attached bark, by means of the machetes. If there are many plants upon a tree, there is no hesitation about cutting the tree down. Plants are not so plentiful at the present time, however, and it is purely an Orchid hunt. Nothing but the trained eye of the Indian can find the Cattleyas in their concealed locations. According to authorities, there are now more commercial Cattleyas in the United States and Europe than growing in their native environment in Colombia.

The appearance of the Orchids as collected is rather disappointing to the Orchid enthusiast who has been used to Orchids in the greenhouse. Masses of dried-up back pseudo-bulbs, old flowering spikes, and dead leaves present anything but a pleasant appearance. The dark green colour to which we have become accustomed in Orchid houses is replaced by a foliage of yellowish-green.

The following extracts from Mr. Pring's diary give a graphic picture of what it means to obtain Orchids under present-day conditions: "I left St. Louis April 1st, bearing letters of introduction from the Colombian Ambassador at Washington to Government officials in Colombia, and from Secretary Wallace to the Minister of Agriculture; also a letter from the Colombian Consul at St Louis. Sailing from New Orleans on the Steam-'Heredia,' I arrived at Havana on April 6th. During the day, among places visited was the botanical garden where seeds of a rare palm were collected. Among the grotesque sights in this city is the human boneyard in Colon Cemetery, where human remains are taken from unpaid graves and diverted to the central human dump. From a botanical standpoint, a fine avenue of Ficus, in which the trees are supported by their aerial roots, was interesting. I arrived at Cristobal, C.Z., April 11th. Having a letter of introduction to Mr. C. W. Powell, an Orchid grower of Balboa, and being assured by telephone that he was at home, I took the train to Balboa. Upon locating his residence and attached Orchid garden, in which is the finest collection of Panamanian Orchids, I was informed that Mr. Powell was on a collecting trip. After visiting Panama City, I caught the train back to Cristobal and sailed the next morning. Before leaving Mr. Powell telephoned me, informing me of his return, and urging me to return to Balbao, but in view of the necessity of meeting Mr. Cyril Allen in Bagota, who was soon leaving for England, I arranged to again stop at Balboa on my return trip. I sailed from Cristobal at 11 a.m. aboard the Steamship 'Sixaola.'

"Aboard ship I was particularly fortunate in meeting Mr. Norman Black, who was making his way back from the States to Bogota. During the conversation I informed him of my mission, and likewise mentioned my letter of introduction to Mr. Cyril Allen, who proved to be a personal friend

of Mr. Black. The entire trip from then was under the guidance of Mr. Black. We arrived at Cartagena, the first Colombian port, the following day. My first impression of Colombia was not very favourable, since there seemed to be very little for the botanist here. Of historical interest is the Spanish wall, upwards of 300 years old, which was built to protect the town against pirates in the early days. Despite the extreme tropical weather, shrubs, perennials, and annuals were seen growing on the old stone wall. A trip through the market place was chiefly notable because ot its unsanitary condition, fish, bananas, sugar, meat, vegetables, all exposed to the many flies. Passing through the parque in the centre of the town I was interested

CATTLEYA TRIANÆ, AS GROWN IN THE STATE GOVERNMENT HOUSE AT IBAGUE, DEPARTMENTO DE TOLIMA.

in seeing a row of empty barrels on each side of the walk, and, upon investigation, found that these were placed here for the purpose of protecting the young, freshly-planted almond trees. This seems to be the favourite tree for street planting in the small villages and towns throughout Colombia.

"Leaving Cartagena, we arrived at the port of debarkation the following day, Puerto Colombia. We left here at 5.30, and reached Magdalena Town, Barranquilla, at 11.30 p.m. During this time one goes through the ordeal of finding bag and baggage and securing reliable natives to transfer same to the mail train that takes one to Barranquilla. There is no checking system, but in view of my ambassadorial letter I was shown every courtesy by the custom officials, who examine bags only at the port. The following morning we went to the aduana, or customs at Barranquilla for trunk inspection.

Here again system was lacking, and people had to find their own trunks. We left the custom house with instructions to return 'mañana.' Again my letter secured us preference at inspection the following morning. At the river steamer office we were informed that all rates had been raised. However, we booked on the 'Ayacucho,' to sail that evening. On leaving the hotel Black said: 'Pring, I forgot my bed equipment.' On asking for an explanation I found that bed equipment for the trip had to be purchased, consisting of a pair of sheets, mosquito bar, pillow and pillow-case, and native straw mat. This equipment cost $14.50.

"The Magdalena river boat was rather interesting to a St. Louisan in that it was an exact replica of those used on the Mississippi river. In fact, we later found that these boats are built in towns along the Mississippi and shipped to Colombia to be assembled. We were shown to our 'cabin de luxe,' which was on the upper deck. The stateroom equipment consisted of an American iron cot, guiltless of mattresses and covers, upon which were placed the recently-acquired bedding; a washstand, electric lights and fan. The two doors were screened, but the windows were bare. We left at nine o'clock. We found it impossible to walk upon the upper deck, inasmuch as the air was filled with thousands of sparks. I was informed that the boat was of the wood-burning type, and in passing backwards and forwards to our cabin we took the chance of our clothes being set afire by falling sparks.

"I had been advised by Americans to buy American canned food and an American ham before leaving Barranquilla, but on suggesting this to Black he told me that I might as well get used to native food, as I would have to eat it for several months; that I would soon become accustomed to, and learn to like, many of the native dishes. When once accustomed to meals as served on the boat I concluded that he was right, as I very soon began to like the various ways in which a banana was served, either as fritters, pies, or as a desert cooked with sweet juices. Among the vegetables the most common was the yuca (Manihot). This is cultivated as a companion crop with corn. Roots from the fully-developed plant are eaten, in shape resembling the turnip and much more farinaceous than the ordinary potato. The meat served would not suit the American palate, inasmuch as the cattle are killed at five o'clock in the morning and served the same day. It is very dark in colour and always hard and stringy. Eggs are served three times a day, and the first question asked by the waiter is 'Comom se huevos, Señor?' Coffee is served in the form of 'Café con leche,' about a tablespoonful of concentrated coffee being poured in the cup, after which boiling milk is added. For desert various tropical fruits are always offered, such as mangoes, avocado, pineapples, and papaya. During the forenoon and afternoon various refreshing drinks are served, prepared from the native brown sugar, others also made from oats.

"Our first port the following morning was Calamar, which is the river port for Cartagena. The next port was La Florida, where we stopped to take on wood for fuel. This performance took place about every five or six hours, day and night, on the trip. The wood is cut from the forest along the river and piled to regulation height. The peons carry all the wood on their backs, the corners of a sack being inverted over the head and held by the right hand extended at arm's length. Another man piles the wood, extending from the right hand to the top of the head of the carrier. When packed to the limit, a piece of rope, about six feet long, held in the left hand, is thrown over the pile and held taught by the right hand. By this crude method the pile is held secure while the peon runs down the gang plank

MR. CYRIL ALLEN AND MR G. H. PRING COLLECTING ODONTOGLOSSUM FLAVESCENS IN THE ANDES OF BOGOTA.

to the boat. With one heave the pile is thrown on the floor, where it is stacked by another man. On an average two hours is taken up in this manner when the boat stops for fuel.

"Just prior to reaching the town of Magangue, the boat again pulled in shore to receive 200 head of cattle. These were placed on the four freight barges, attached to both sides of the steamer. These cattle were on the boat for four days, during which time they were only given water. The vegetation on each side of the river for the first two or three days was very disappointing and uninteresting, because of the lack of rain in this part of the country. What vegetation was present presented a yellow appearance.

(To be continued.)

ORCHIDS AT OLD SOUTHGATE, LONDON.

VISITORS to the fortnightly meetings of the Royal Horticultural Society always appreciate the groups of Orchids shown by Messrs. Cowan & Co., of Old Southgate, London, and they do so principally for the reason that on each occasion plants of more than ordinary merit are staged, frequently with one or more novelties as a centrepiece. Messrs. Cowan's nursery is within eight miles of Charing Cross, and on this account it is visited by most of the Orchid folk who come to London, not only from the country but from abroad as well. Some of the original houses constructed 35 years ago are still in use, and contain large plants of various Cymbidiums and numerous Cypripediums. With the continual need for extra accommodation, additional houses have on different occasions been built, so that the present establishment consists of four houses, each 120 feet in length, four of 107 feet, two of 110 feet, as well as several others of 70 feet length, and smaller ones for seed raising.

Connecting the longest houses is a spacious corridor well filled with flowering Cymbidiums, noteworthy examples being insigne roseum, of deep rose, insigne rubrum, of reddish colour, Sibyl, very delicate, ivory-white with a greenish tinge, Castor, of a pleasing yellow, Redstart, deep rose-pink, the labellum marked with reddish-crimson, and Landrail, as well as the much older Wiganianum. Cymbidium Nelly var. Golden Glow well deserved the R.H.S. Award of Merit, in colour rich yellow, the labellum having a zone of dark crimson. There is no doubt that Cymbidiums are extremely popular, and the future will see many novelties in the way of fresh colour schemes. The greater part of a long span-roofed house is occupied by several thousands of unflowered Cymbidium hybrids, and judging by the parents used there is every likelihood of improved forms and novelties being produced within the next year or two.

For many years past, Cattleyas have been the principal feature of this firm's productions. An early result that attracted attention was C. iridescens, produced by crossing bicolor with Eldorado, the latter parent giving the bright yellow isthmus to the labellum, a character that met with much appreciation. The next step was the crossing of iridescens with Dowiana, the resulting seedlings, known as Sibyl, showing flowers of increased size and better form, while still keeping to the clear yellow colour. The third step has lately been seen in C. Diana (Sibyl × aurea), in which the combined characters of all the specific parents blend happily and yield some of the finest modern hybrids in the popular yellow-flowering section.

The albino class of Cattleya has also been taken in hand with successful results. Probably the best is Cattleya Linda (Cowaniæ × Lady Veitch), while another is Albania (Harrisoniana alba × O'Brieniana alba), with

stiffish flowers. C. Bryan alba (Fabia alba × Lord Rothschild alba) is white in the sepals and petals, but coloured on the labellum. C. Douai is also cultivated, mainly on account of its free-growing quality, and also because its flowers are amongst the largest in the white section. C. Trianæ var. The Princess is unusually good as regards breadth in the petals, while C. Trianæ, Uplands variety, is noteworthy on account of the fact that it is the parent of Brassocattleya Cliftoni magnifica, a superb hybrid that is universally esteemed. Cattleya species are not cultivated in anything like the quantities formerly seen, but there are here a few dozens of Mossiæ, Trianæ, Gaskelliana and a score or more of Mendelii, the latter all propagated from a richly coloured variety that was cultivated in Liverpool upwards of 35 years ago.

At the time of taking these notes, Cattleya Enid superba was in flower, a plant of special interest, not only for its elegant flowers, but for the reason that it is the parent of the world-renowned C. Tityus (Enid × Octave Doin), raised at Southgate. Looked at from all points, C. Tityus is the finest hybrid Cattleya yet produced. It is a great improvement on both parents and possesses a robust constitution. Many First-class Certificates have been awarded to plants from this particular batch. Autumn-flowering Cattleyas have been produced in Hassallii (Empress Frederick × labiata), Salara (labiata alba × Astron), and in Regina (Dupreana × labiata), while there is a very fine lot of Hardyana alba, the flowers being produced four or five on the spike. A handsome flower of soft and rich coloration is produced in C. Sylvia (Dowiana × Fabia), while amateurs desiring large flowers have their wishes satisfied in many of the Warscewiczii hybrids.

Passing through these extensive houses, one is much struck with the extreme cleanliness of all the plants, not an insect pest is to be seen, nor are there any damaged leaves caused by past attacks or errors in cultivation. Osmunda fibre is the principal material used for potting, a few heads of sphagnum moss being tucked in on the surface. Another point worthy of note is the number of leaves borne by all the plants, right back to the youngest seedling bulb there is ample evidence of the sound methods of culture that go so much towards the kind of plant favoured by amateurs. Immense quantities of various hybrids have been despatched to distant countries, and in every case the plants have arrived in sound condition.

Hybrids of Brassavola Digbyana are another feature of this enterprising firm. Mention may be made of Brassocattleya Menda, produced by crossing Bc. Digbyano-Mossiæ with C. labiata, of Bc. Nestor (Bc. Mad. Chas. Maron × C. labiata), and also of Bc. Cowanii (Bc. Digbyano-Mendelii × Bc. Thorntonii). But by far the best is Bc. British Queen, which has for its parents Bc. Digbyano-Mendelii and C. Lord Rothschild. Amongst the Brassolæliocattleyas there are several deserving special mention, but those

that have particularly distinguished themselves are Blc. Muriel, Blc. Thyone, and Blc. Jupiter, the latter generally regarded as not only the largest of all the Brassavola hybrids, but by far the most pleasing in its general softness of colour tinting, while it has the additional good point of being the first in its section to produce flowers each season. Many of the older Brassavola hybrids have been so much reduced in stock that further batches of the popular kinds are being raised, and examples can be seen in a large batch of Bc. Thorntonii, as well as of Bc. Digbyano-Mendelii. A promising batch of seedlings nearing the flowering stage exists in Bc. Mrs. J. Leemann, crossed with Lc. Carmencita, which should make a fine yellow flower, considering the yellow species contained in both parents.

Læliocattleyas have long been popular, not only for their usually free-flowering habits, but also on account of the ease attending their cultivation. Læliocattleya *Zeno*, A.M., R.H.S., is a specially fine variety of dark rose-pink, the labellum being deeply frilled, of intense ruby-crimson colour, and considered by some experts to be the finest lip yet seen on a Cattleya hybrid. Lc. General Maude var. Victory is regarded as the finest Læliocattleya, the extensive and flatly-formed petals stand up well, while the large labellum is rendered particularly effective on account of its rich purple front lobe and the orange-yellow veining in the throat. Other Læliocattleyas that invariably meet with approval include Mita (C. Fabia × Lc. Golden Oriole), Mildred (Lc. Phœbus × C. Sibyl) and Litana (C. Sibyl × Lc. Thyone), in which many golden-yellow forms have been seen. One of the best known of the older kinds is Lc. eximia, and this crossed with C. Dowiana produced a handsome hybrid known as Lc. Ivanhoe. And still another step has been made by crossing Lc. Ivanhoe with C. Dowiana, thus increasing the influence of this species and yielding a very fine batch of hybrids that has been recorded under the name Lc. Nanon.

There are now many Læliocattleyas with white sepals and petals, they vary much as regards size, the largest being derived from C. Warscewiczii var. F. M. Beyrodt. One of the best of these large flowers can be obtained in the fine Lc. Hassallii alba. For cut-flower purposes Lc. Urbania can be well recommended. It was obtained by crossing Lc. eximia with C. Warscewiczii, and all the plants have a striking character as regards the free manner in which flowers are produced, generally four and five on the spike.

Some of the long span-roofed houses are entirely filled with unflowered seedlings, including some promising crosses, as C. Regina × C. aurea, C. Venus × C. Triumphans, C. Venus × C. iridescens, and Lc. Buenos Aires × Lc. St. Gothard. Special interest is attached to the large batches of albino hybrids, for they comprise C. Cowanii alba × C. Warscewiczii alba var. Firmin Lambeau, while C. Lady Veitch has been crossed respectively with

Snowdrop, C. Mrs. Myra Peeters, and with C. intertexta Juliettiæ. A result that is being awaited with more than ordinary interest is the flowering of hybrids obtained by crossing Cattleya Lady Veitch with itself.

In other safe places of this large establishment one comes across a fine batch of Cattleya Hardyana alba, the lip being coloured, an extensive lot of Lc. luminosa aurea, as well as Lc. Aphrodite, as yet unflowered, but produced from the finest parents procurable in recent times. There is also a batch of C. Octave Doin that has been raised from the old C. Mendelii from Liverpool, and fine plants of Cattleya Lueddemanniana Empress, in which the flower is wholly white. Two flowering specimens of Cattleya amethystoglossa take one back to the early days, but they are still very pleasing, and possess the distinction of bearing spotted flowers.

Considerable space is given to the cultivation of Cypripediums of the best kinds. Those that have recently made a fine display include Bedfordiæ, a large flower of excellent shape, three varieties of Perseus, distinguished respectively as Moonbeam, Alpha, and the F.C.C. variety, Desdemona, Haddon House variety, always esteemed, and Elise II., with a large flower bearing much spotting. The house containing the principal stock of Cypripediums is 110 feet in length, and at one end is a batch of Sanderæ-Kimball, as well as numerous plants of Maudiæ, Holdenii, and other popular kinds. The F.C.C. variety of Boltonii, as well as Swallow, a very beautiful flower, and nitens-Leeanum Becktoniæ also look very well. The Cypripediums are cultivated in a fibrous mixture containing a proportion of finely broken crocks to ensure porosity.

In the section devoted to Miltonias of the vexillaria kind, a very pretty group consisted of Bleuana, Hyeana, Reine Elizabeth, and Isobel Sander, the latter particularly meritorious. Lælia anceps in most of the noteworthy forms and varieties is cultivated with more than ordinary success, and the winter flowers of this species are much appreciated, as also are those of L. Gouldiana. Suspended in shallow pans are many flowering plants of Dendrobium atroviolaceum, while on the end staging are large specimens, just coming into flower, of Maxillaria Sanderiana, the scarce Odontoglossum hastilabium, Spathoglottis *Z*ebrina and S. Fortunei.

Odontoglossums are always popular, and fine varieties are very much in demand. Messrs. Cowan possess a superb example in O. Purple Crown, a large flower, the broad petals prettily toothed at the margin, while the whole area of the sepals and petals is rich violet-purple, except for a narrow white margin that adds distinction. In O. Seraphis var. Dusky Monarch, A.M., R.H.S., there exists a finely-formed flower of chocolate-red colour, the segments having a narrow outer zone of rose tint, while the labellum is also good. Among the yellows, a particularly pleasing hybrid can be seen in Antinous (excellens × Othello), which is of bright golden yellow colour,

the segments bearing a few dark spots, that on the lip being chestnut-red. O. crispum of the Doinii type, and others of the Pacho breed, look well with their tall spikes of many flowers, while close by are examples of the xanthotes varieties.

Odontoglossum Tityus is specially attractive, as also is Elfreda, derived from Uro-Skinneri, which it closely resembles in the formation of the segments. O. Orosius and O. Rosina are a couple of plants that have only to be seen to be admired, and the same remark applies to a batch of O. Conqueror. A large portion of the staging is reserved for seedling Odontoglossums, which are pricked out several dozen in a small pot.

Many of the best Odontiodas are here cultivated, perhaps Pacavia (Madeline × Brewii) may be singled out on account of its rich, blood-red colour suffused throughout the sepals and petals. A long list could be given of the varieties, but such in no way would describe their particular points of merit. Masdevallias comprise the robust Macrura, Gargantua, the white tovarensis, and several dozen others.

Phalænopsis amabilis is quite a success in this establishment, the several dozen plants being the picture of good health, and now sending forth some strong flower spikes. Oncidiums are grown in batches, including recently imported plants of Forbesii and Marshallianum. At the end of one of the houses, and growing in a large teak-wood basket, is a curious looking hybrid which came out of a batch of Cattleya Tityus; all the bulbs are well separated by an unusual length of rhizome, somewhat resembling the rhizome connecting the bulbs of Cœlogyne pandurata, but not quite so marked in character. This peculiarity was noticed in the early days of the plant's seedling stage, and has ever since remained constant, although the flowers themselves do not differ from the normal type. Several fine plants of Cœlogyne pandurata also grow well on the end staging.

Dendrobiums in great variety, including many specimens, have yielded an abundance of flower during the past few weeks, one of the best being nobile Berkeley's variety, also chessingtonense and Apollo grandiflorum. Several strong plants of Stanhopea tigrina, S. Wardii, Bulbophyllum Fletcherianum, and Cymbidium Huttonii are among the many other interesting plants awaiting intending visitors. It is very rarely that one comes across so many perfect examples of cultivation, and such general neatness in all the houses.

CYPRIPEDIUM LOWII.—Messrs Stuart Low & Co., have recently flowered this rarity. It was discovered in Sarawak, North-West Borneo, by Sir Hugh Low, to whom it is dedicated, and is found growing in the forks of the branches of trees, at a great height from the ground.

NEW HYBRIDS.

Name.	Parentage.	Exhibitor.
Brassolæliocattleya Miss Eileen Low	Lc. Chantini × Bc. Digbyano-Trianæ ...	Clement Moore
Cattleya Model	chocoensis × Suzanne H. de Crom	Sanders.
Cattleya Percivederæ	Percivaliana × Schrœderæ	Sir. J. Colman.
Cymbidium edinense	Iris × Coningsbyanum	Botanic Gardens, Edinburgh.
Cymbidium Iris	Lowianum × giganteum	
Cypripedium Anne	Olbia × Hera	F. J. Hanbury.
Cypripedium Brunton	Jas. O'Brien × Mrs. Mostyn	,,
Cypripedium Fredk. Wm. Sander	Carola × Nirvana	Sanders.
Cypripedium Green Mantle ...	Æson × Beryl	J. Crombleholme
Cypripedium Earl Zealandia ...	Earl of Tankerville × Lord Wolmer	Robert Paterson.
Cypripedium Hancar	Hanburyanum × Carola	F. J. Hanbury.
Cypripedium Hermosa	Gaston Bulteel × Prince Albert	Charlesworth.
Cypripedium Hoodie	J. Howes × Leeanum	F. J. Hanbury.
Cypripedium Irma	Hera × Robsonii	,,
Cypripedium Jaffa	Memoria Jerninghamiæ × Leeanum	,,
Cypripedium Mentor	Leeanum × Leander	,,
Cypripedium Michael	Blanche Moore × Zeno	,,
Cypripedium Prince George ...	Camorin × Alcibiades	S. Gratrix.
Cypripedium Purple Splendour...	Thompsonii × rubescens	F. J. Hanbury.
Cypripedium The President ...	Gladiator × Eurybiades	Mrs. Gratrix.
Cypripedium Tripos	Swinburnei × Thompsonii	F. J. Hanbury.
Cypripedium Ursula	Zeno × Mrs. Audrey Locke	,,
Dendrobium bletchleyense ...	Dulce × nobile	Sir H. Leon.
Dendrobium Iona	signatum × chessingtonense	,,
Dendrobium Lady Violet ...	Regium × Lady Colman	Sir J. Colman.
Læliocattleya Warcasta ...	C. Warscewiczii × Lc. Epicasta	Sir H. Leon.
Lowiara aurata	S. grandiflora × Bl. Mrs. Gratrix	Charlesworth.
Odontioda Audrey	Brewii × Elsie	,,
Odontioda Columbia	Oda. Alcantara × Odm. St. James	,,
Odontioda Induna	Oda. Thwaitesii × Odm. Rolfeæ	R'chd. G. Thwaites.
Odontioda Miala	Oda. Thwaitesii × Odm. eximium	,, ,,
Odontioda Purple Emperor ...	Coronation × Armstrongii	Armstrong & Brown.
Odontoglossum Margarita ...	eximium × Doreen	Cowan.
Odontoglossum Prince Imperial	promerens × Diamond	McBean.
Potinara luminosa	Slc. Jeanette × Bc. Ena	Charlesworth.

Odontoglossum Mrs. John Owen.—From the collection of John Owen, Esq., Linn Brae, Clarkston, Glasgow, we have received an elegant flower bearing the above name. It results from the crossing of Empress of India with ardentissimum, Shrubbery variety, and promises to further improve. The segments are broadly formed, while the sepals and petals are almost covered with confluent blotches of reddish-purple, the colour being nearly as decisive when the flower is viewed from the back.

Vanda.—The name Vanda was communicated to Dr. Robert Brown, the founder of the genus, by the eminent scholar and linguist, Sir William Jones. It is a Sanscrit word of rather wide import, for it seems to have been used for the common Vanda of Bengal and North-East India (Vanda Roxburghii), and also for any other Orchid of similar habit, as Aërides odoratum; it was also applied to a parasitical plant, as the Loranthus or Mistletoe. The genus was selected by Lindley, as the type of one of the fundamental (tribal) divisions of the order (Vandeæ).—*Veitch, Manual of Ochidaceous Plants.*

ROYAL HORTICULTURAL SOCIETY.

February 26th, 1924.

MEMBERS of the Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (secretary), E. R. Ashton, J. Wilson Potter, Richd. G. Thwaites, J. Cowan, A. McBean, J. E. Shill, H. G. Alexander, H. H. Smith, A. Dye, F. K. Sander, H. T. Pitt, Stuart H. Low, R. Brooman-White and Sir John Rutherford, Bart.

FIRST-CLASS CERTIFICATE.

Miltonia William Pitt var. Rosslyn (Isabel Sander × Bleuana var. Reine Elizabeth), from H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood). Undoubtedly the finest hybrid yet seen in the vexillaria section. The small plant carried a couple of flowers, in size and formation resembling M. vexillaria, but having the segments entirely covered with a glorious ruby-crimson colour. The base of the labellum is bright lemon-yellow, with radiating lines of similar colour, while between this yellow mask and the ruby-crimson area is a narrow white zone that greatly enhances the beautiful effect.

AWARDS OF MERIT.

Odontoglossum Leander (parentage unknown), from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. Sorrell). A very pleasing hybrid carrying four flowers of large size, the broadly developed segments prettily barred and spotted with rose-purple.

Odontioda Purple Emperor (Coronation × Armstrongii var. Peerless), from Messrs. Armstrong & Brown, Tunbridge Wells. One of the finest of Odontiodas. This small plant carried two flowers which promise to further improve in quality when more matured. The segments are flatly displayed, the broad sepals and petals deep violet-rose in colour and bearing a solid blotch of claret-red on the central area of each. The labellum is mottled with rose-purple and bears a conspicuous bright-yellow crest.

GROUPS.

E. R. Ashton, Esq., Broadlands, Tunbridge Wells (gr. Mr. C. Kent), received a Silver-gilt Banksian Medal for an effective exhibit of species and hybrids. In the centre was a fine example of Cattleya Trianæ, Broadlands variety, and on either side well-flowered plants of Læliocattleya luminosa aurea, Lc. Schrœderæ and a handsome form of Brassocattleya Enid rosea. Dendrobiums were at their best in chessingtonense var. J. M. Black and Apollo grandiflorum, while Odontoglossums were represented by crispum Cooksonianum, percultum, and Ashtonii, the latter having previously received an Award of Merit. The Odontiodas included Fowler's F.C.C. variety of keighleyensis, the A.M. variety of Joan, also Fowler's variety of Joan, with 14 flowers, and Oda. St. André, with bold reddish markings.

J. J. Bolton, Esq., Claygate, Surrey (gr. Mr. S. Lyne), was awarded a Silver-gilt Banksian Medal for an exhibit comprising ten superb Odontoglossums and Odontiodas. The former included Aglaon majesticum, with a grand spike of 14 flowers, white, with decisive chocolate markings; a blotched crispum with 16 flowers; eximium Daphne, with a spike of 14 well-developed blooms, and ardentissimum Robsonæ, which still holds its own as one of the best of its kind. The Odontiodas embraced Brackenhurst, of deep blood-red colour, Royal Scot, bold, with large blotches, and Collinge var. Rosemary, with a spike of 11 bright red flowers, and to which an Award of Merit had been previously given.

Messrs. Cowan & Co. received a Silver Banksian Medal for a well

ODONTOGLOSSUM ARDENTISSIMUM ROBSONÆ
Exhibited by J. J. Bolton, Esq.

arranged group, containing in the centre a fine variety of Brassocattleya British Queen and a grand form of Cattleya Tityus. Læliocattleya Hassallii alba, white with purple lip, stood out boldly, as also did Cypripedium Desdemona, Haddon House variety. Dendrobiums were represented by atroviolaceum, well-flowered plants of Wiganiæ, Cybele and others, while Cymbidiums were seen in Gottianum and Sibyl sulphureum, the latter bearing flowers of an uncommon sulphur tinge, and which may prove of value as a parent.

Messrs. Stuart Low & Co. received a Silver Banksian Medal for an

exhibit of Læliocattleya luminosa aurea, Miltonia Bleuana, the rare Lælia Jongheana, and Arpophyllum giganteum, with erect spikes of small rose-coloured flowers. Cirrhopetalum picturatum, Dendrochilum glumaceum, and Sophrocattleya Atreus were also in fine form.

Messrs. Sanders were awarded a Bronze Banksian Medal for a group containing Cattleya Fred Sander, with white flowers, Læliocattleya Octavia, with rose-tinted blooms, Oncidium Forbesii bearing a fine spike of gold and chocolate coloured flowers, also Odontoglossum nævium and Brassocattleya Pallas. Cymbidiums were well staged in Albatross, Butterfly and Gottianum.

Sir Jeremiah Colman, Bart., exhibited Dendrobium Lady Violet (Regium × Lady Colman), of large size, the segments broadly formed and of rich purple tinting, the disc on the labellum being deep maroon.

Messrs. J. & A. McBean staged Odontoglossum Prince Imperial (promerens × Diamond), of excellent formation, and promising to develop into a grand variety. The segments are neatly marked with chocolate-purple blotched and spots, the petals having a zone of similar colour near the margin.

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March 11th, 1924.

Members of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), G. F. Moore, R. G. Thwaites, J. E. Shill, C. H. Curtis, H. T. Pitt, H. H. Smith, J. C. Cowan, R. Brooman White, A. McBean, F. K. Sander, T. Armstrong, J. Wilson Potter, C. J. Lucas, Stuart H. Low, and Sir John Rutherford, Bart.

AWARDS OF MERIT.

Cymbidium Linnet var. Olive (Alexanderi × Holfordianum); from Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander). A distinct flower of clear olive-green colour, the labellum lighter and slightly spotted.

Cymbidium Ring Dove var. Ruby (Dryad × Miranda); from Sir George Holford. This plant carried a spike of ten pretty flowers of rose-pink colour, the expansive labellum boldly marked with dark crimson spots and a median line.

Cymbidium Macaw (parentage unrecorded); from Sir George Holford. The spike bore ten flowers of a peculiar crimson-brown tint, the cream-coloured labellum having a deep-crimson V-shaped blotch.

Cymbidium President Wilson, Westonbirt variety (Lowianum × Alexanderi); from Sir George Holford. A handsome result, in which the spike bore ten large flowers of bronze colour stained with red. The labellum cream-yellow and with an intense crimson V-shaped blotch.

Cymbidium Redstart var. Rosy Gem (Dryad × Pauwelsii); from Sir George Holford. A beautiful flower of rose colour, the broad labellum white, speckled with rose on the margin, crest yellow.

Cymbidium Ceres var. rubrum (I'Ansonii × insigne); from Messrs. Sanders. A grand hybrid, with a tall erect spike of large flowers, in colour reddish rose with delicate shading of lighter tints.

Cymbidium Alexanderi var. The Princess; from Messrs. J. & A. McBean. A beautiful hybrid, bearing a couple of erect spikes, the large flowers broadly developed, of a pleasing rose-pink colour, the labellum margined with rose-crimson.

Odontioda The Torch (Odm. ardentissimum × Oda. Sanderæ); from Messrs. Sanders. A fine addition to this section, the flowers having broadly developed segments of a pleasing crimson-rose colour.

Cultural Commendation.

To Messrs. J. & A. McBean, for a superb example of Læliocattleya Eunice alba var. Constance, bearing three erect spikes with a total of nine well developed flowers, which are pure-white, except for a small rose-coloured spot on the labellum.

Groups.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), was awarded a Gold Medal for a grand exhibit of Cymbidiums staged at the end of the Hall. In addition to the five Cymbidiums that received Awards of Merit there were many others of almost equal beauty, among them being well-grown examples of Yellow Hammer of bronze tint, Bustard, very pretty, Bullfinch, greenish, Curlew, golden yellow, Gannet, of deep rose pink, and several varieties of Alexanderi, of which Magnolia and Alabastor stood out prominently.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. Collier), received a Gold Medal for a superb exhibit of Lycaste Skinneri in great variety, the plants being well cultivated and splendidly flowered. There were also included Læliocattleya J. F. Birkbeck, with three immense flowers, the elegant Brassocattleya Gatton Lily, Angulocaste Cooperi, and A. Vesta, both attractive, the curious Masdevallia deorsa, with pendulous foliage, the pretty Cœlogyne pulchella, with four erect many-flowered spikes, several Cymbidiums of merit, a selection of the best Dendrobium hybrids, as well as Odontoglossums and many Cypripediums.

Messrs. Sanders received a Gold Medal for an extensive exhibit of Cymbidiums, the plants being well staged and in all cases finely flowered. Among the many distinct varieties of Cymbidium insigne mention may be made of St. Alban, with deep rose suffusion on the front of the labellum, of Perfection, with reddish spotting, and of Redbreast, equally distinct. The hybrids comprised a wide selection, including Yellow Hammer, a charming

form, Ceres, deep rose-pink, Kestrel, pinkish, and Martin var. Gold Shower, of distinct qualities. The well-known C. Pauwelsii was staged in plants bearing spikes with as many as 36 flowers, while in the variety of this hybrid called Vesuvius, the flowers are richly suffused with red. Cattleyas, Odontoglossums, and Dendrobiums were all in fine order.

Messrs. Cowan & Co. were awarded a Silver-gilt Banksian Medal for an attractive exhibit, containing fine varieties of Cymbidium Redstart, Castor, and Winnianum along the back, while the centre was composed of Cattleya Tityus, a grand flower, C. Trianæ var. Princess, pure-white and of fine quality, Lc. Hassallii alba, in which the richly coloured labellum stood out prominently against the white sepals and petals, and the large flowered Brassocattleya Apollo. On each side were specimen plants of the interesting Cattleya amethystoglossa and fine forms of Lycaste Skinneri.

Messrs. Charlesworth & Co. received a Silver-gilt Banksian Medal for a group of choice hybrids, the centre being occupied by a fine variety of Miltonia Wm. Pitt. Several new Cypripediums were shown, including Ophelia and Radium, while Odontoglossums included some richly-blotched varieties; Odontiodas were seen in Mirella, of rich violet-purple, and in Schrœderi. Dendrobium atroviolaceum was in fine condition, and among the hybrids of Sophronitis grandiflora, mention may be made of Slc. Anzac, with comparatively large flowers of reddish-scarlet colouring.

Messrs. Stuart Low & Co. received a Silver-gilt Banksian Medal for an attractive exhibit comprising several large specimen plants of the best Cymbidiums, the many-flowered spikes being seen at their best. C. Sunset yields flowers of a pleasing yellow colour, tinged with crimson, while C. Ceres var. Robin, has blooms of a distinct reddish colour. Among the species were fine examples of C. insigne and C. Devonianum, the latter well flowered, while Dendrobiums were represented by the beautiful Brymerianum. Miltonia Bleuana and Odontoglossum hybrids were in excellent state, as also were some Odontiodas of fine formation and colour. Cattleyas were represented by Gravesiana alba and Monarch.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Banksian Medal for an interesting exhibit, comprising well-flowered plants of Dendrobium atroviolaceum and D. Thwaitesiæ, the pretty Sarcochilus Fitzgeraldii, the green-coloured Lycaste gigantea, several Odontoglossums, such as Zenia and Miranda, as well as Epidendrum Endresii.

Messrs. J. & A. McBean exhibited Læliocattleya Arcturus, of bright cinnabar-red colour, Cymbidium Alexanderi var. Princess, the attractive Lc. Eunice alba var. Constance, and Odontioda Speculation, cream-coloured, the sepals blotched with red-brown.

Baron Bruno Schröder, Englefield Green (gr. Mr. Shill), showed

Cattleya Minnehaha (Trianæ × Lady Rowena), a large white flower, the labellum openly displayed and with an orange-yellow central area.

Richd. G. Thwaites, Esq., Streatham, exhibited Odontoglossum Goveri var. Swietinicolor (maculatum × Chieftain), with a spike of six dark reddish-crimson flowers.

THE ORCHID CLUB.

THE meeting of the Orchid Club, held at Manchester on March 7th, was the occasion of a capital display of finely-grown Orchids, the appearance of Dendrobiums, Lycastes and Cymbidiums in the various groups indicating the changing northern season.

Dr. R. N. Hartley gave a paper on "Some Cultural Experiences," in which he detailed and demonstrated by actual specimens methods of cultivation which he had worked out on scientific principles, and from which it appeared how little serious thought had been given to the question of soil or medium in Orchid culture during the last fifty years.

Diplomas of Merit.

Cypripedium J. M. Black, Beckton's var. (Beryl × Eurybiades var. Mirum), the round dorsal sepal is slightly convex, white, covered with very large crimson spots, the petals broad and well displayed, yellowish-green flushed and spotted with crimson. The pouch well proportioned and in harmony with the petals.

Cypripedium Memoria F. M. Ogilvie var. majesticum, from Dr. Craven Moore. This is one of the best series raised by G. F. Moore, Esq., of Bourton-on-the-Water, and has not been previously exhibited. A medium-sized flower, unique in shape and in the development of the petals. The dorsal $2\frac{3}{4}$ transdiameter, rounded in form and flat, is white, with scattered dark crimson spots and a small green luna. The petals flat and well displayed, in their outer halves to almost circular form, and are two inches deep. Their colour is green, the upper halves overlaid with deep mahogany crimson flush, the lower halves marked with a few crimson spots. The well-proportioned pouch is green, flushed with crimson. The general outline of the flower is reminiscent of a trefoil.

Cypripedium Olympus var. The Secretary (Alcibiades × Leeanum), from Dr. R. N. Hartley. Dorsal sepal three inches transdiameter. A large well-set and proportioned flower, suggesting an enlarged form of Leeanum Clinkaberryanum, the petals and pouch more broadly developed and more brightly coloured than in the Leeanum parent.

Groups.

Fred. Hardy, Esq., Ashton-on-Mersey (gr. Mr. C. Branch), exhibited a very showy group, the centre being a fine example of Brassocattleya Pallas,

supported on each side by splendidly grown plants of Lycaste Skinneri, bearing upwards of ten flowers to each leading bulb. The body of the group was filled with Odontoglossums and Dendrobiums.

Dr. F. Craven Moore showed a few select Cypripediums.

B. J. Beckton, Esq., Irlams-o'-th'-Height (gr. Mr. W. A. Stewart), staged a group of Dendrobiums and various botanical Orchids, including the unique Oncidium splendidum holoxanthum, the pretty Angræcum citratum, Cœlogyne sparsa, and cut spikes of the handsome Eulophiella Rolfei.

A. T. Cussons, Esq., Prestwich (gr. Mr. C. Cookson), showed a group of Cymbidiums, including good examples of Ceres, Sanderæ and Gottianum, interspersed among which were Cypripedium Maudiæ and Lælia harpophylla, making a most effective display.

J. H. Walker, Esq., Eccles (gr. Mr. G. Weaver), exhibited a mixed group of Dendrobiums and late-flowering Cypripediums, including Cyp. Memoria F. M. Ogilvie var. The King, and a fine plant of Dend. nobile var. The King.

Sir William Thom, Blackburn (gr. Mr. R. Williams), staged an effective group, conspicuous plants being Dendrobium Hebe magnificum and various Odontoglossum hybrids.

Dr. R. N. Hartley, Wigan, exhibited some well-grown examples of Dendrobiums, Cypripediums, and Cymbidiums to illustrate his paper on Orchid culture.

W. Morton Jackson, Esq., Wilmslow, staged a few plants, including a very fine example of Masdevallia simula.

Messrs. Mansell & Hatcher, Ltd., Leeds, exhibited a large group, effectively staged on moss and composed of Cypripediums, Odontoglossums and Odontiodas in large variety.

MR. FRED HARDY.—We regret to have to record the death, which took place on March 21st, of Fred Hardy, Esq., President of The Orchid Club, and for many years the owner of an extensive collection of Orchids at Tyntesfield, Ashton-on-Mersey. Cattleya Hardyana was named in honour of Mr. Hardy's father, of Pickering Lodge, Timperley.

RODRIGUEZIA DECORA.—This species is well distinguished by its scandent habit, its curiously-shaped but very pretty flowers, and especially by the prolongations of the column. It was first introduced from the province of Sao Paulo, in Southern Brazil, by M. de Jonghe through his collector Libon, and flowered for the first time in Europe in Makoy's nursery at Liège in May, 1851. It is usually cultivated upon a piece of tree fern or block of wood, but has become somewhat rare during recent years.

TREATMENT OF CALANTHE VEITCHII.

THE new growths of Calanthe Veitchii and C. vestita, if water has been withheld since blooming, and the plants rested in a dry position in an intermediate temperature, will now have new growths from one to two inches high and new roots pushing from the base, and when in this condition they are best repotted. I find that the nature of the compost for these is not of so much consequence as one might suppose, but what is of far greater importance during the season of growth is the position the plants occupy and the careful use of the watering-can, especially directly after repotting. Ours are potted in a mixture of good turfy loam, broken in small pieces (not chopped), to a bushel of which is added about a gallon each of broken charcoal and coarse silver or river sand, and well mixed up together. The pots are one-third filled with drainage, and the bulbs, having all the old materials shaken away and the old roots trimmed off, are repotted into this new, sweet material, which is pressed down rather firmly. The base of the bulbs is inserted about half an inch, and secured in that position by a small stick, to which the top of the bulbs are tied. Calanthes succeed best if grown in pots singly or in pairs; full-sized pseudo-bulbs will want a 32-sized pot, a 48-sized pot being large enough for small bulbs. When the potting is completed the surface of the compost should be about half an inch below the rim of the pot, in order to facilitate the watering. They should then be placed in the warmest house near to the glass, a shelf being a most desirable place, where there is an abundance of light, and shaded only during very bright sunshine in summer. Give a very little water at first—once a week will probably suffice—gradually increasing the supply as the leaves grow and the plant becomes strongly rooted; then treat like any other stove plant, simply thoroughly watering when the plants become dry. The disease known as the "spot," which disfigures the foliage and bulbs, may be caused by insufficient heat, light, or air, but generally can be traced to over-watering, and when once contracted remains in the system for a considerable time. Liquid manure should not be applied until the new growth is far advanced, about July; then, if the plants are healthy, a weak solution is beneficial.—*H. A. Burberry, April*, 1894.

CŒLOGYNE CORRUGATA.—A species well distinguished by its curiously wrinkled pseudo-bulbs, first gathered by Dr. Wight about the year 1845 on the Neilgherry Hills, in the neighbourhood of Courtallum, Southern India, flowering in August and September, and where it was subsequently found by Thomas Lobb, but who failed to send home living plants. It was first cultivated in England, in the Royal Botanic Gardens, Kew, in 1863.

MANCHESTER ORCHID SOCIETY.

February 29th, 1924.

MEMBERS of the Committee present:—Messrs. R. Ashworth (in the chair), A. Coningsby, D. A. Cowan, J. Cypher, J. Evans, Capt. W. Horridge, J. Howes, A. Keeling, D. Losh-Thorpe, E. W. Thompson, and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES.

Læliocattleya Hassallii alba magnifica, a grand flower with white sepals and petals, the well-formed labellum Tyrian purple, margined with white; from Mrs. Gratrix.

Odontoglossum crispo-Solon var. Helma, a splendid flower of good substance, all the segments heavily blotched with crimson on a white ground; from P. Smith, Esq.

AWARDS OF MERIT.

Dendrobium Brymerianum giganteum, D. Bassattii magnificum (Rolfeæ × melanodiscus), Cypripedium Perseus var. venustum; from S. Gratrix, Esq.

AWARD OF APPRECIATION—FIRST-CLASS.

Odontioda Cilleham, West Point var.; from Mrs. Gratrix.

CULTURAL CERTIFICATES.

To Mr. J. Howes, for Læliocattleya Schrœderæ var. Our Queen, and Cattleya Enid alba var. Our Queen.

GROUPS.

S. Gratrix, Esq., West Point (gr. Mr. J. Howes) was awarded a Gold Medal for a group of Dendrobium in variety, fine Cattleyas, and others.

Messrs. Cypher & Sons received a Large Silver Medal for an exhibit containing Cypripedium Maudiæ, Masdevallia Gargantua, the scarce Oncidium olivaceum, and various Odontoglossums.

Messrs. A. J. Keeling & Son exhibited several good Cypripediums, Lælia anceps Schrœderiana, Dendrochilum glumaceum and Oncidium cucullatum.

Mr. J. Evans, Colwyn Bay, staged Cattleya Hassallii alba var. Regina.

Mr. J. Birchenall, Alderley Edge, exhibited Dendrobium speciosum.

MASDEVALLIA CUCULLATA.—Discovered by Linden, near Bogota, Colombia, in 1842, and afterwards gathered by Wallis, Rœzl, and others, but not introduced until 1883, when the first plants that reached Europe alive were collected by Carder for the firm of Shuttleworth & Co. M. cucullata is known in its native country by the name of La Viuda, "the widow," on account of its sombre-coloured flowers that are hooded by a conspicuous bract. Rœzl stated that this name was applied by all the children in the neighbourhood of Sonson.

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VOL. XXXII. No. 371. MAY, 1924.

THE ORCHID REVIEW

Founded in 1893 by R. A. ROLFE, A.L.S.

Edited by GURNEY WILSON, F.L.S.

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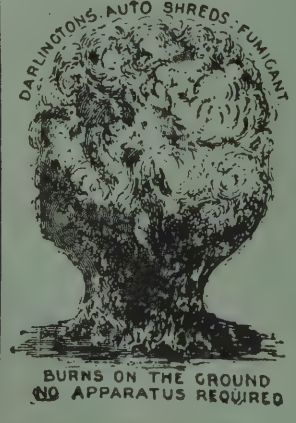

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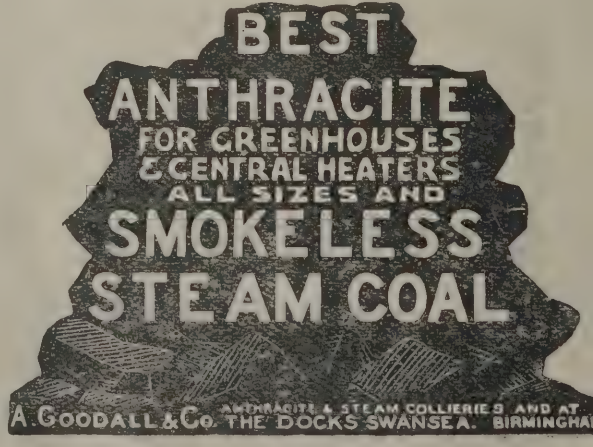

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To face p. 129.

THE ORCHID REVIEW.

VOL. XXXII.] MAY, 1924. [No. 371.

NOTES.

ANSELLIA GIGANTEA.—This plant belongs to a tropical African genus of about six species, and is the only representative which occurs in South Africa. It is figured in *The Flowering Plants of South Africa* (t. 122), January, 1924. The flowers are a pale lemon-yellow colour, sometimes barred or blotched with brown. Hooker and Bolus suggested it might be a variety of the tropical African Ansellia africana, but Rolfe considered it to be a distinct species, as described by Reichenbach, and this opinion has been followed in the present instance.

PETALOCHILUS.—In the *Journal of Botany*, March, 1924, Dr. R. S. Rogers describes Petalochilus, a new genus of New Zealand Orchids. The outstanding feature is the ancestral form of the labellum. The excellent vernacular names, Cup and Pouch Orchid, originally applied by the discoverer, Mr. H. B. Matthews, have been latinised and used to distinguish the two species, P. calyciformis and P. saccatus, both of which are well depicted in an accompanying plate. We regret to learn that in all three places where Mr. Matthews had been accustomed to collect the Cup Orchid, the tea-tree, among which it grew, had been cleared for agricultural purposes, and that, unless a fresh locality should be discovered, this interesting plant will be no longer available to students of botany.

EPIDENDRUM CRISTOBALENSE.—A recent issue of the *Botanical Magazine* (t. 8996) contains a coloured plate of this quaint and striking Orchid. It was discovered by Mr. C. H. Lankester in the hedges of the Matomora District on the north-western slope of the volcano Irazu in 1918. More recently it has been found by him on the highland of San Cristobal to the south-west of Cartago. The plant is closely allied to E. Laucheanum, which was introduced by Messrs. Sanders over 30 years ago. Both species are referred to Lindley's division Spathium. The remarkable fleshy or waxy flowers are borne on pendulous racemes, often of great length (30-50 cm.); the sepals and petals are salmon-pink to tawny colour, the lip olive-green.

CYMBIDIUM EBURNEUM.—If there are some members of the Orchid family which command our admiration on account of their splendour, there are others which charm us by the display of beauty of a different order. Such a one is our present subject, which, to its graceful evergreen foliage, adds large flowers of perfect purity and the most delicious fragrance. Thus wrote Warner when describing Cymbidium eburneum in his *Select Orchidaceous Plants*. He added Lindley's remark that "the flowers of this charming plant are not only among the largest of the genus, but among the sweetest; they resemble in fragrance those of the Chinese Cymbid, than which nothing is more delicious. Not a spot inteferes with the pure, ivory-white petals, except one long yellow stripe, along the middle of the lip."

SILVER CUP FOR BOSTON SHOW.—The following letter has been addressed to Mr. Alfred Loveless, Secretary of The American Orchid Society:—"We, the undersigned, Trade Growers of Great Britain, have much pleasure in sending by our good friend, Mr. Gurney Wilson, a Silver Cup. We ask the American Orchid Society to accept this as a Prize at the forthcoming Boston Orchid Exhibition, and that it be awarded to the owner of the best Orchid in flower at the Exhibition. Our sincere wishes for a most successful Exhibition and for the continued prosperity of all concerned with Orchids in your great Country accompany this gift. With fraternal greetings, we are, yours very truly, Armstrong and Brown, Charlesworth & Co., Cowan & Co., Cypher & Sons, Flory & Black, A. J. Keeling & Sons, Stuart Low & Co., J. & A. McBean, Mansell & Hatcher, Sanders."

CATTLEYA AMETHYSTOGLOSSA.—Several specimen plants of this interesting species have recently been flowering with Messrs. Cowan & Co., at Southgate. Warner selected this fine old Orchid as the second subject for his *Select Orchidaceous Plants*, remarking that it is one of the finest and most distinct of the fine genus to which it belongs. Although this statement cannot be applied to-day with the same degree of accuracy, the plant possesses some characteristic points not often seen in the genus. Firstly, the segments are spotted with rose-purple, and secondly, the labellum is rich amethyst-purple, from which the specific name is derived. C. amethystoglossa is stated by Warner to have first bloomed in the well-known collection of Mr. F. Coventry, of Shirley, near Southampton, an amateur who possessed one of the finest collections of Cattleyas. At the sale of the Shirley collection, the plant was purchased by Mr. Warner and subsequently exhibited at the Royal Horticultural Society, on March 4th, 1862, when a First-class Certificate was awarded. C. amethystoglossa has been described as a synonym of C. guttata var. Prinzii, but its true specific rank is now generally acknowledged.

DENDROBIUM DELICATUM

(Kingianum × speciosum var. Hillii).

I COLLECTED plants of Dendrobium delicatum in Toowoomba, Queensland, a good many years ago. In its native habit this natural hybrid seems to be very rare, but I am certain that it is the plant mentioned by Bailey in his Queensland Flora. I searched for this rarity in all the likely places in the neighbourhood of Toowoomba, and it took me a long time before I succeeded in at last discovering a nice patch growing on a very steep cliff.

Dendrobium speciosum grows mostly on sandstone rocks, but D. speciosum var. Hillii is nearly always found growing on trees, in situations as mentioned above, on rocks, too, and I saw some very large specimen plants a few yards above the D. delicatum patch, whilst large masses of D. Kingianum were to be found close by. I had to return with a rope, which I tied to a tree on top of the cliff, and let myself down the perpendicular side. As it was the only patch of this long sought for hybrid, I took only a part of it, leaving the rest undisturbed.

As Mr. Bailey himself was in doubt as to whether this plant is of hybrid origin or species, I searched further, but could find only one more single plant, about 500 yards away from the first found patch. I have no doubt that this plant is a natural hybrid, but I think that some varieties of D. speciosum have very often been mistaken for it. Especially in the north of Queensland, Cardwell, for instance, I have found several distinct forms with much thinner bulbs formed in solid masses. D. delicatum is of easy culture, and rather a pretty object when well flowered.

Wilhelm Schmidt.

The above interesting information greatly assists in clearing up the difficulties that have long surrounded D. delicatum. In 1892 a hybrid between speciosum and Kingianum flowered with Sir Trevor Lawrence, in whose collection it had been raised from seed, and to which a Botanical Certificate was given when exhibited at the Royal Horticultural Society, February 28th, 1911. It was described in the *Orchid Review*, 1896, p. 107, as D. Kingiano-speciosum, although an earlier name appears to be D. specio-Kingianum, under which it is recorded in Sander's List of Hybrids. Mr. R. A. Rolfe contributed an article on D. delicatum to the *Orchid Review*, 1908, p. 88, and a note on p. 112. Mr. Wilhelm Schmidt kindly sends two well-developed spikes of D. delicatum, each bearing about 25 flowers of creamy-white tint, and agreeing closely with the spike of flowers figured in the *Orchid Album*, vol. vii. t. 332, as D. Kingianum album, but which is now believed to represent D. delicatum.

DENDROBIUMS.

(*Continued from p.* 107.)

HAVING arrived at the time for repotting, and having trimmed the plant of useless bulbs and dead roots, a pot should be selected that will allow of sufficient root room and be large enough to hold sufficient crocks and compost to hold the plant secure, and, when tied up, remain balanced on the staging. A hefty leading bulb with strong break will make a lot of roots during the season if given a fair chance. The potting must be done firmly, in fact, it will be next to impossible to pot too firmly, and the compost should be kept below the rim of the pot, anyway at the sides. When potting, one should attempt to have the surface raised in the centre, so that it is convex, or slightly dome-shaped. The reason for this shape is that the water will then fall towards the rim of the pot and trickle down the sides, wetting that part of the compost which dries first and where the roots like to be. The centre of the compost being furthest away from drying influences will thus run less danger of remaining too wet and becoming sour than if this precaution be not taken.

The plant should afterwards, or during the performance, be staked straight up for the sake of balance and neatness. This tying straight up is not quite natural, as most Dendrobiums are pendulous or semi-pendulous, but it is necessary, and they do not resent it in the least.

After repotting, they will require to be watered very sparingly for a few weeks until the new roots get a hold of the compost, but frequent spraying overhead and between the pots will assist the plants to re-establish themselves. At this period, and as the season advances, they will enjoy all the heat that the sun can give them, but avoid giving too much water at any time. They will also require to be shaded from the hot sun, and particularly after repotting.

It is possible that considerable shrivelling will follow the repotting and flowering, but this should not cause unnecessary worry, nor yet entice one to give more water at the roots. It may be even months before the shrivelling disappears completely, but if all the roots that are made are retained, disappear it will as the new bulbs near completion.

As it is unlikely that many growers will be able to give a house to Dendrobiums, accommodation may be found in the Cattleya house, where they will grow healthily and sturdily. Give them the hottest part, but as the season advances any part will be hot enough, and give as much light as is safe for the other plants.

During the season, as the young growths advance and become heavy, they must be looped up for fear they bend and break; the three months of August, September and October will see the greatest development in the

bulbs. The growing season, nominally ending in September, will find the Dendrobiums still some way from the terminal leaf, but the bulbs will lengthen long after this and gain in girth, swelling beyond the dreams of the optimist. From September to November the Dendrobium should be allowed to consolidate itself leisurely and in its own way. No more attempt should be made at high, close temperatures. Air, light and the necessary water, and considering that the plant is now newly fledged with actively transpiring leaves, and that we are encouraging this transpiration all we can with air and light, the watering may have to be more generously applied. The early shrivelling will now have disappeared, or be fast disappearing, and we must see to it that no more shrivelling occurs until the plant has yielded its beautiful harvest in the spring—if then.

We now come to the so-called resting period, and what do we find? We find that during December the plants remain much the same as they were in the middle of November. Then in January (the dates are approximate) we find the buds swelling from the nodes, and, if some are not already in flower, we are looking forward to the not far distant day when we shall renew acquaintance with the dainty blossoms. Please note that we have grown and "rested" the plants in the same house, and we have never been happy if the temperature has been below 55 degs. Please also note that at no period has there been any "drying off."

Less watering—much less watering—just because the plant remained plump and the compost damp, because everything remains damp in the murky days of winter. With January the days lengthen and the sun gains power. Already we feel spring almost in the houses. We are finding it necessary to give a little more air, even on the top during some days, and we find our Dendrobiums are drying out just a little more, and so we may have to water a little more. Do we water because the buds are swelling? We pay no attention to the buds. That is the plant's duty, and our duty is to the plant. Good advice at this period (January) is to restake the plants, seeing that the flowering bulb is well apart from the others, so that the flowers may have room to build themselves and fall naturally without encroachment from leaves or bulbs. The treatment until the plants flower will not change, and so we have made the cycle.

Propagation.

We have gone through in some detail, perhaps too much detail, the treatment of Dendrobiums for the year, but there are one or two matters yet to speak of, and one of these is propagation. In propagation we have the secret of continuity in Dendrobium growing, for in propagation we rejuvenate the plant, and in propagation we find proof for our belief that numerous flowered back bulbs are useless, if not injurious.

In propagating Dendrobiums, one must be satisfied that the thing propa-

gated is worth while. It would be childish and waste of effort to propagate an ordinary nobile or Wadianum, but desirable if either of them is more than an ordinary variety. Hybrids, such as Thwaitesiæ and chessingtonense are always worth propagating.

The Dendrobium, although provided with nodes, right from the base of bulb to the tip, never flowers from all these nodes, although each node contains a potential inflorescence. All Dendrobiums are more or less apical flowering, and few, like formosum, apical only. Nearly all those that interest us most flower from halfway up the bulb to the top, and if very well ripened they will sometimes flower two-thirds of the bulb, thus a third or half of the nodes will always remain dormant, and it is from these that we can make new plants.

It is not necessary to cut off a bulb that has just flowered for this purpose, the bulbs that lie outside the radius of usefulness can be used ; but if one has something really choice, and where propagation, and not flowers, is a first desideratum, one can cut off the flowering bulb before there is any indication of the flower-buds swelling, and make each node a plant instead of an inflorescence. When propagating from back bulbs the best season to make the "cuttings" is in spring, when re-potting, but if it is the previous year's bulb that it is proposed to operate on, then this should be cut off early in October, for then the buds are still dormant and are indifferent as to whether they become leaves or flowers. The cuttings are made by sectioning with a sharp knife between each node, then each section is stood on end in a compost composed of sand and moss, or in an ordinary mixture of fibre and moss. Precaution must be taken that each node section is placed right way up. Three-inch pots are large enough, and these may be crocked half-way up and then tightly packed with potting mixture. One can then push the potting-stick down between the edge of the pot and the mixture, and pressing the latter inwards insert the "cutting" in its place, several in a pot. I am trying to emphasize the importance of having the compost tight. These propagating pots should then be put in the warmest corner wherever that may be, but not in a hot case, and the compost kept moist, but not wet. Do not be in a hurry to expect plants immediately, but in the course of a year you will have many little plants to pot on.

Here are some measurements that I have just taken of a propagated plant of Thwaitesiæ, Veitch's var., an average plant from a fair number of well-grown propagated plants. The plant in question is three years old, and the first bulb from the node is just two inches, the next six inches, and the present lead eighteen inches. The second bulb has six nodes and the leading bulb fifteen, the internodes being longer in the latter. Last year's bulb, the six-inch one, is flowering from two nodes, and one may reasonably expect flowers from nine on the present lead next year, when the

plant will be four years old. The plant is at present in a three-inch pot, but will have a considerable shift presently.

The insect pests that attack the Dendrobium are thrips, scale and red-spider. To be healthy it must be kept free from these. It is also liable to get a kind of black canker, which is caused by keeping the plant in a close-growing atmosphere during the months of September and October. During these months the night air is heavily charged with moisture, and there is a disposition to dispense with fire-heat, which is a mistake. Stagnation in the atmosphere following a hot day, with the air overcharged with moisture during the now lengthening nights is the cause of much mischief to many Orchids at this period. Whatever growth Dendrobiums have made by the end of August must be considered enough, and no forcing further be attempted, the remainder of the sunny season being applied to consolidation or ripening.

These notes were written in February, and should be read as dating from last month.

CYMBIDIUM CULTURE.

DURING recent years, Cymbidiums have leapt into favour and prominence, not only with amateurs who specialise in Orchids, but with those who do not make any pretence in the cult. Probably no flowering plant has a greater all-round claim, when fairly considered, either to usefulness, beauty, or ease of culture. Added to this, the genus is one of the least costly to cultivate, while the flowers are the most durable known. Therefore, one has clear, valid reasons why Cymbidiums are deservedly coming into the front rank with all lovers of flowers in general, and with Orchidists in particular.

A safe minimum temperature for Cymbidium insigne hybrids is 50 degrees. Higher temperatures are not destructive or derogatory to good culture, and in the spring and summer months these plants thrive well with natural rises of temperature, providing air is freely admitted.

One often hears the enquiry: What are the best potting materials? Generally, good fibrous loam, with the earthy part shaken out as much as possible, and osmunda fibre, in equal parts, with a less proportion of broken brick, or charcoal, for porosity, will answer the need. Experience teaches that the best time to report is about six weeks after flowering, for, as a rule, renewed activity is observable at such period, and also because the plants so potted have ample time for recovery before again pushing their flower spikes.

It may be argued by experienced cultivators that potting operations should be performed when the new leading growths are well advanced and

the argument carries some weight. Cymbidiums, however, when in good health, are always in root action, and therefore give better flowers when the potting operation is performed as far away as possible from the new flowering season. The plants appear to yield the best all-round results when given a comparatively small shift, which, of course, means potting them more often, but it does not interfere with the flowering, and plants so treated, will, as a rule, not fail to flower each season, nor will they be unduly fatigued by so doing. For the benefit of those who desire a definition of the term "small shift," it means that the plants should be potted on exactly as are Chrysanthemums and Geraniums, or any other plants of the usual cut-flower type.

Cymbidiums are free-rooting plants at all seasons, and therefore require proportionate watering, but any perpetuation of the saturation system means destruction. It is a good practice to allow the plants to become periodically dry, and then to give them an adequate supply of water. Spraying of the leaves, particularly the under side, from March to the end of September is beneficial, and in hot weather two or three times daily. This will greatly assist in the prevention of attacks by insects, such as red spider, and the destructive thrip.

The flowering season is now an extensive one. It commences with C. Orion, about October, and is followed by Doris, in November and December, the last month seeing it at its best, especially about the Xmas period when flowers are most in demand. Early in the New Year, Schlegelii comes into flower, and a succession of splendid hybrids is maintained by the flowering of Alexanderi, Pauwelsii, Castor, Gottianum, President Wilson and Thrush. This is approximately the usual rotation, but there is some degree of over-lapping, and difference in the respective periods as climatic conditions differ in various localities. There is a host of others, and one may possess a delightful continuity of charming flowers right on to June, and frequently beyond. Cymbidiums possess wonderful stability and vitality, inasmuch as they bear huge spikes of bloom for long periods, extending up to three months without undue fatigue. This reveals a phase in plant life unmatched by any other pot-flowering plant. For cut-flower decoration, the lasting quality is undeniably beyond the possibilities of any other genera.

Enthusiasm in this genus has not yet reached its highest level, but as each successive season reveals new colours, finer forms, and better cultural results, the wave of enthusiasm will increase in force, and Cymbidiums will be the most generally cultivated plant in existence. They can be successfully grown in almost any type of ordinary glass-house, among ferns or even with the general run of cut-flower plants, while the owner gathers delight from their vigour and beauty.

AN ORCHID EXPEDITION TO CENTRAL AND SOUTH AMERICA.

(*Continued from p.* 113).

THE next port of interest was La Gloria. Here one was gratified in having sufficient time to view the native houses. These resemble stucco, but Black informed me that the skeleton is made of bamboo and the stucco made from river sand mixed with cow manure. From here on the vegetation began to be of interest—the mahogany delta appearing. About the only amusement one finds throughout the day is watching the alligators, which vary from three to fifteen feet long, basking in the sun, and which form targets for those possessing revolvers or guns. After leaving the town of Gamarra we began to view some very picturesque scenery, with the western Cordilleras appearing. The next important town was Bodega Central, the river port for exporting cargo from the prosperous town of Bucaramanga, the latter shipping 250,000 bags of coffee to the United States annually. From Bucaramanga to the river port is a four-day mule-back trip.

"The next town was Puerto Wilches, a river port for the exporting and importing of both cargo and passengers to and from Bucaramanga. It possesses a railroad of seventeen miles, which was intended, when begun, to connect Bucaramanga, but the remaining 120 miles is by mule-back. During the rainy season the Bodega Central route is used, combined with freighting over the river Lebrija. The vegetation here becomes very interesting, presenting a darker green appearance than lower down the river. Lots of trees, including the native cedar, bombax, lignum-vitæ, and closer to the river, the giant bamboo. Here we passed the river Lebrija, where we unloaded some American machinery. I was particularly interested in some large heaps of palm seed, which I readily identified as the ivory nut palm. It is from this region that the ivory palm is exported to the States for the purpose of making buttons.

"After leaving the river port I had my first experience of seeing Orchids upon trees, together with various other epiphytes, including bromeliads, Nephrolepsis, Polypodiums, mosses, etc., the young growth being impenetrable. Particularly noticeable was the rattlesnake plant, leaves of which are used for wrapping the native brown sugar in cake form. Various species of Heliconia, presenting their bright orange-coloured bracts, were very picturesque. The scenery, with the mountains in the background, was almost beyond description.

"Transit for these last two or three days was extremely slow in view of the various sandbars, so much so that travelling at night had to be abandoned. It is interesting to note that there is not a single government light along the entire river to indicate a navigable channel. The pilots evidently

pick the channel out by observation or by instinct. The rapidity of the stream is estimated at six miles per hour. In places the river is extremely wide, covering hundreds of miles of territory. One is disappointed in not seeing the number of wild birds expected. After the heat of the day is past, which is after three o'clock, there are numbers of parrots, which always fly in pairs. Along the edges of the streams the bird most frequently seen is the egret. During transit one becomes indifferent to the familiar sound of the bottom of the boat dragging on the sandbars. However, on reaching a bend in a narrow part of the river, we ran aground and were held fast. In the course of two or three hours the boat was pushed off by means of long mahogany poles, and block and tackle attached to a winch. After taking soundings with ordinary bamboo rods, we were found to be in only 2½ feet of water, so the boat backed out and tied to the bank to await patiently the rise of the river.

"It was here that I started my first collections for the herbarium. I had not gone very far through the impenetrable vegetation when my friend Black advised me not to be quite so much interested in plants, but more so in my own safety, in view of rattlesnakes, etc.

"During two days and three nights spent here several monkeys were shot, and the only excitement was watching other boats going through the same experience with the sandbar. Within two days there were eight boats tied up at this point, aggregating twenty per cent. of the navigation of the river. much interest was shown in the black measuring stick on the side of the river which gradually indicated the rising stream. A most unusual incident for a passenger ship was the shutting down of the boilers, under orders from the captain, which resulted in no electric lights, no fans, no water in the shower baths, and, last but not least, no water for sanitation. Upon remonstrating with the captain we were informed that he was saving fuel, despite the fact that the banks on each side were heavily wooded. The morning of the third day, at six o'clock, the gauge indicated that there was three feet of water, so we finally got by the sandbar.

"From now on the river was quite narrow, the scenery very picturesque, with mountains all around. We finally reached the uppermost port of the Lower Magdalena River, La Dorada. From here we caught a wood-burning train to Beltran, a distance of sixty-five miles. The object of this railroad is to avoid the rapids at Honda, which cause the river to be unnavigable at that point. Honda is likewise in a big coffee-shipping district. Arriving at Beltran at twelve o'clock we again went through the unpleasant pandemonium of transferring baggage to the boat on the Upper Magdalena River. We arrived here after a very picturesque trip. One of the interesting towns in Ambalema, situated in a big coffee-growing district noted for its native-made cigars; also for its pottery. On this trip we noticed various native

rafts floating down stream, carrying principally coffee and bananas. The coffee-rafts are the most permanent, being built of bamboo, with double decks. The bananas are floated down on rafts made from the banana trunks. When arrived at their destination the bamboo rafts are sold for the purpose of house building, whereas the banana rafts, after being unloaded, are cut loose to continue their trip of disintegration down the river.

"We arrived at Girardot the following morning. This is the uppermost navigable port of the Upper Magdalena River. It has a population of 12,000, and is the centre of the coffee district. The coffee is not grown here, but it is the main shipping centre for all the Magdalena and Bogota region.

"The next step of our journey was started the following morning, to Bogota. Leaving at 7 a.m. by train, we started our upward climb from the tropics, 600 feet above sea level, to the temperate climate of Bogota, 8,500

LEAVING UPPER MAGDALENA RIVER ON RAFT EN ROUTE TO THE NAVIGABLE PORT OF GIRARDOT.

feet. We got as far as Facatativa, where we were obliged to change to another train because of a difference in rail-gauge. We finally arrived at Bogota at five o'clock on May 1, exactly one month from the time we left St. Louis. After travelling in the tropics, at Bogota one feels the effect of the altitude in the form of headaches and increased heart action. The Sabana of Bogota is extremely picturesque, surrounded by the eastern Andes. The population is approximately 140,000. During my first week in Bogota I suffered from a slight attack of ptomaine poisoning, after which I had many consultations with Norman Black, who kindly consented to act as my agent, and with Mr. Cyril Allen, who very kindly put me in touch

with his native collectors, who could obtain the varieties of Orchids wanted in quantity for the garden. I was advised by both Black and Allen not to go with the native collectors to gather Orchids, inasmuch as I would be exposed to malaria, typhoid, etc., combined with the danger of being absolutely at the mercy of the natives of that region, especially as my knowledge of Spanish was extremely limited. Again, the word would undoubtedly be passed in advance that an 'Americano' was coming and prices would be raised in proportion.

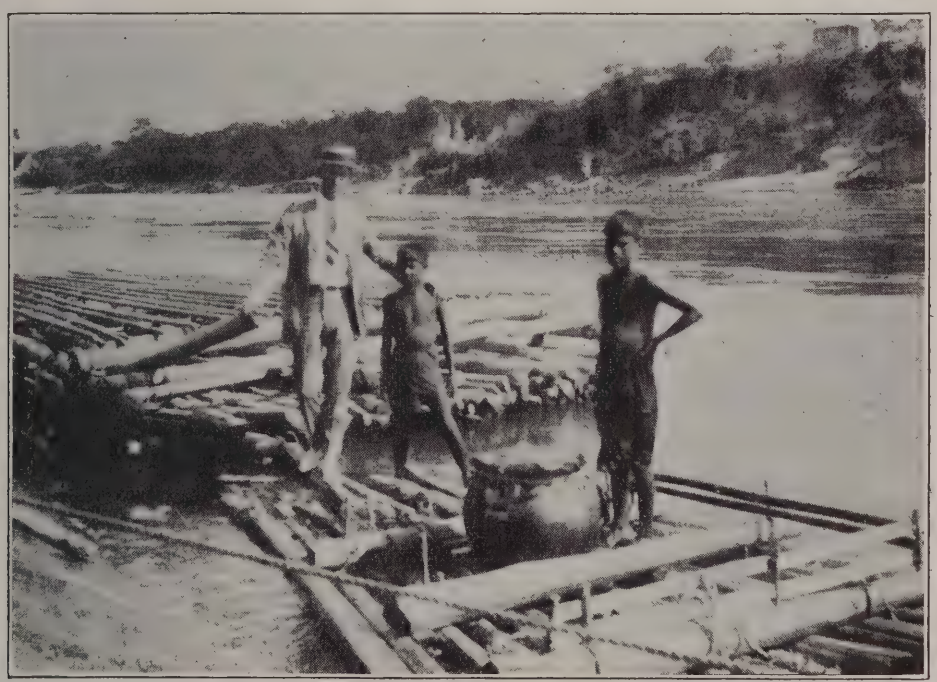
"In view of the fact that Cyril Allen had collected and exported Orchids for the past fourteen years, and that Norman Black, through his experiences with the natives in dealing in coffee, knew of their financial trustworthiness, I decided that their advice was final. As Mr. Allen was leaving shortly for Europe, quick action was necessary. Within two weeks I was in touch with a native collector of Cattleya Trianæ, and another to collect Cattleya Schrœderæ, in two widely separated regions. To collect these two varieties in the quantity desired, Mr. Allen stated that he would have demanded six months' time. On the other hand, I was contemplating a six weeks' stay in Bogota. The transactions with the natives were accomplished by Allen and Black, it all being carried on in the native tongue. I was present at the conference, but only as a guest of Black, and not supposed to be interested in the Orchid transaction. In other words, Black was the agent who wanted the shipment for export. This meant that the Garden got the benefit of strictly native prices, which it would have been impossible for me to obtain.

"The next difficulty for me to settle was the financing of the natives, who had to take sufficient money to buy the plants from the collectors in the fields. Norman Black strongly advised me not to advance any money. Allen, on the other hand, stated: 'If you don't advance the money to buy the Orchids, it is impossible to expect the natives to bring them to your base of operations.' So I finally decided to advance sufficient money to purchase the plants in their native habitat. After arrangements were made by telegram, and later with the native agent at the small village of Natagaima, he presented himself at Girardot to receive the first payment. On seeing him Black recognised him as one of his best coffee-shippers, which was much of a relief to me, as he had always found him absolutely reliable.

"Inasmuch as arrangements were now completed with reliable native collectors, I turned my attention to the business of collecting in the Andes around Bogota. In this region, at an altitude of 9,000 feet, only terrestrial Orchids are found. Some interesting genera, such as Pleurothallis, Stelis, and Odontoglossum were prevalent. The latter genus is noted for its yellow-flowered species, flavescens, which is often mistaken for Oncidium when first seen. This species evidently will soon become extinct, since the natives collect the plants, strip off the leaves, and carry the pseudo-bulbs down to

the market place, where they are sold for food. We first discovered this species through the remains of the leaves which had been torn off and left on the trail. Another interesting Orchid which is familiar in our collection is Epidendrum. The majority of the species are of epiphytic habit, but those in this region are terrestrial. They may be found growing either along the hedge-row in company with various other tall-growing plants, or in dense shade. The most common species noted is the pink-flowered Epidendrum elongatum.

"Apart from the Orchids, the flora is very limited in the Andes of Bogota, and the majority of plants seen are dwarf in size. The native authorities are reforesting the mountains in the vicinity of Bogota with the Australian



ARRIVAL AT GIRARDOT, SHOWING DOUBLE BAMBOO RAFT IN BACKGROUND.

eucalyptus, which they use for building purposes. There are no other large trees at this altitude, excepting those in cultivation in private gardens, such as Australian species of Acacia and various species of Ficus which have been introduced from lower altitudes.

"In addition to collecting Orchids, my attention was now turned to the collecting of herbarium specimens. My first experience was rather interesting. I visited a suburb of Bogota called Chapinero, and having collected two or three dozen specimens, which I was carrying in my arms, I attracted the attention of small boys, who likewise immediately got busy collecting, and very shortly I was beset by them, holding up weeds and wanting to sell them to me. One of the most common plants here is the dandelion, which is, of course, imported with European or American grass seed. Drying

specimens for the herbarium is not a very easy proposition in Bogota because of the moist atmosphere. After these daily trips all specimens had to be placed between drying pads and finally put in press to prevent spoiling. On an average it took ten days to two weeks to prepare specimens, all the drying papers being changed daily.

"A place of interest, both because of natural scenery and as a collecting area, is Tequendama Falls. From Bogota you can go by train to within three miles of the falls and the remaining distance by ox-cart. The falls are not very large from the standpoint of volume of water, comparing them with Niagara, but they have a drop of over 300 metres. I think the natural scenery surrounding this area is the most picturesque I have ever seen. For the Andes of Bogota, the hills are extremely rich in the Orchids mentioned, and in general the flora is much richer. I was very highly interested in a white-flowered Epidendrum, which I finally succeeded in reaching and bringing back for the Garden collection. One of the exciting incidents for an American is leaving the Falls by ox-cart during rainy weather, and trying to catch the train to Bogota. The springless cart in which I rode held seven other people, and we felt as though we might be dumped over the precipice at any time. One of the many other places visited in this region is Chia. Here, before entering the town, one passes over a very picturesque stone bridge built by the Spaniards in 1792.

"On June 10th, I was highly delighted to receive a telegram from the Cattleya Trianæ collector at Natagaima, stating that the Orchids would shortly be leaving that region, and that the natives had brought in 50 arrabas more than he was supposed to purchase and did I need them. My reply was that I would take all that had been collected.

"My next trip was to Girardot, the uppermost port of the Magdalena River. Here I found fifty cases of the coveted Cattleya Trianæ in the Norman Black warehouse, awaiting my inspection. A half-dozen cases were unpacked, and I found that my instructions regarding packing had been carried out to the letter. The shipment was now ready for its homeward trip. The plants in this shipment were collected near the small village of Natagaima, where my native collector had his base of operations. From here he spread the news that he was in the market for 'Tulipans,' and the natives immediately got together their pack-mules and started in all directions for the Orchid hunt. During this time my agent was making packing cases of a standard size and construction, so as to permit plenty of ventilation. Bamboo strips were used at the ends of most of the cases, permitting free circulation of air into the centre. Of course it had been necessary for him to buy American nails, and likewise saw and hammer, before leaving Bogota for this small native village. After a period of three to four weeks the natives, with their pack-mules loaded with 'Tulipans'

roughly tied in bundles, began to arrive. These were bought for the collector for so much the arroba. They were then cleaned and put under cover to dry, then packed in the cases without any packing material whatever. The most important feature was to see that the plants were absolutely dry when packed, otherwise they will rapidly begin to rot.

"The next lap of the journey was by mule back to the Upper Magdalena River, twenty-five mules with two cases each being required. Here a large double-decked coffee raft was waiting. On this raft the cases were floated down the stream to my base operations in Girardot. From there they were again freighted on mule back to the Norman Black warehouse, near by. The next part of the journey, after their final inspection and O.K., was in the hands of Mr. Norman Black. From the warehouse to the boat by pack-mule again, by steamer to Beltran to La Dorada, where they were again unpacked and taken to a steamer on the Lower Magdalena River to continue their five or six hundred-mile trip to the coastal town of Barranquilla. From there they were sent by train to Puerto Colombia; from there by ocean steamer to a New Orleans steamer. At New Orleans they were taken in charge of our agents and shipped to East St. Louis by fast freight. To hasten delivery at the Garden, automobile trucks brought them to the Garden without awaiting transfer across the river by the Terminal Railroad. This itinerary of the Orchids from their native environment to their new home emphasises the fact that the biggest factor of expense is transportation and not the original cost of the Orchids.

"Inasmuch as the collector of Cattleya Schrœderæ needed two or three months to get to his region along the Venezuelan border, I decided to leave the details of forwarding the balance of the shipment in the hands of Mr. Black. Twelve cases of this shipment have recently arrived at the Garden in good condition.

"After successfully getting the plants which I had been sent for, my thoughts now turned towards home. Unfortunately, most of the Magdalena ports were under quarantine for yellow fever which was prevalent in the Bucaramanga region, so I was advised to go by mule back over the mountains to the Pacific port of Buenaventura. I was particularly interested in making this hazardous trip, inasmuch as it took me through the 'Tulipan' region. I was not the only person anxious to leave for home, as during the last week in Bogota my friends, including a Virginian, a Spaniard, and an Ecuadorean, the latter gentleman having been with me during my entire stay in Colombia, were all glad to get away.

(To be Continued.)

MASDEVALLIAS FOR AMATEURS.

SO great is the influence of fashion, even among enthusiastic Orchid growers, that for many years past Masdevallias have been generally neglected by amateurs who possess only small collections. It certainly was a great pleasure at the Chelsea Show of 1923 to see this genus represented by several well-bloomed specimens, both of the more showy and the small botanical types; by many visitors the brilliant coloured varieties were greatly admired. Therefore it is to be hoped that ere long Masdevallias will again become more prominent in collections, and when finely flowered specimens are produced they will add a splendid change of colour to the groups of Orchids now generally exhibited.

That there are some very beautiful flowering plants among them is well known, such, for instance, as the best variety of M. Veitchiana, the individual blooms being three to four inches in length, and of a brilliant orange colour, the surface of the lower sepals being set with deep-purplish hairs, the effect of this being that at every turn of the flowers a lovely shade of purple is to be seen. There is also M. Harryana, and its numerous distinct varieties, named in honour of Sir Harry Veitch, which is equal in some respects to M. Veitchiana in its beauty, but it is quite different in colour, and of which the many varieties range from a bright lilac through all the shades of purple to a deep rich crimson. M. ignea is another free-growing and distinct species. The late Prof. Reichenbach said the colours of the flower were a dazzling scarlet mixed with orange scarlet, too dazzling to look at long. Dr. Hooker remarked that "it thus suggests a transition from the red heat of M. Veitchiana to a white heat." In distinct contrast to these three brilliant species is M. Davisii, sometimes called the golden Masdevallia, the colour of the flowers being of a clear orange-yellow, and therefore quite distinct from any other Masdevallia.

Another great contrast to those already mentioned is the snowy white M. tovarensis, glistening at night like a snow-flake, its white spicy-scented flowers, arranged compactly without stiffness on the top of a stem varying in length from four to eight inches, are extremely charming. During the dull months of December and January they are always appreciated, not only from a decorative point of view, but for cutting purposes generally. Good flowering specimens of M. tovarensis always form very attractive objects, and particularly for grouping with the orange-red-crimson, bright lilac, and yellow flowered species. In addition, if the plants are kept in an intermediate, moist, airy temperature, the flowers will last perfect for five or six weeks. Experienced Orchid cultivators know that the spikes will, if not cut below the scape from which they are produced, again yield flowers the next year. To retain these spikes for another year it is necessary

to cut the flowers with so short a stem that they are practically useless, and undoubtedly the retention of the old spikes tends to weaken the plant. Therefore, each year it is advisable to cut the flower spikes to their base. This species, being a native of Tovar in Colombia, should be grown in the coolest house from April to October, and during the next six months a cool shady position in the intermediate house is the best place for it.

Several other Masdevallias, such as maculata, infracta, etc., produce

MASDEVALLIA SHUTTRYANA, CHAMBERLAIN'S VARIETY.

flowers from the old peduncles, which should be removed after sending forth a reasonable number of flowers. Among the Masdevallias which are grown principally for the singularity and quaintness of their flowers, the following may be mentioned: M. Gargantua, macrura, with large leaves resembling those of a Cattleya, elephanticeps, Peristeria, Ephippium, coriacea, etc. These are all interesting to the botanist. In M. polysticta we have a free growing and exceedingly floriferous species; there are several varieties in cultivation, some having larger and darker markings on a pure white ground, while others are white suffused with pink. Well bloomed plants of all of them form pretty objects, each spike producing many small spider-like

flowers. We seldom see M. racemosa Crossii now, but it is a pretty and distinct species.

The sensitive M. muscosa is now often seen in collections, and few plants excite so much curiosity and interest to visitors, its movable labellum being the principal attraction ; upon the slightest touch with a pin or thin piece of wood the lip closes itself upwards to the column, a natural device which may probably tend to the flowers being duly fertilised by insect agency. M. muscosa is a dwarf-growing species, and with it may be included those few charming Masdevallias as Estradæ, caudata, ionocharis, Wagneriana, Armini, etc. Well grown plants of any of these dwarf varieties when smothered with their small pretty flowers are lovely objects. Owing to their dwarf compact habit of growth, these and similar species may be suspended well up to the roof glass in order to bring them as near to the light as possible. Being thus situated, they are, if not carefully attended to, often injured by insufficient atmospheric moisture, which may be overcome by periodical light overhead spraying, particularly during hot, dry weather outside. Well bloomed plants of M. Schrœderiana are always greatly admired, also the rare M. deorsa, which has distinct drooping foliage and is extremely interesting.

In former years Masdevallias received considerable attention from several hybridists, who succeeded in producing a number of distinct and pretty hybrids. Only a few here are mentioned, such as Chelsonii, Chamberlainiana, Courtauldiana, Curlei, Graireana and stella. The whole of the Masdevallias mentioned grow best in a cool, but not a cold, house, doing well with the Odontoglossums of the crispum type during the summer months, but if through the winter they can be conveniently afforded a few degrees more warmth it will be to their advantage ; failing this, the warmest end of the cool house is the next best position for them.

At all seasons water to the roots should be carefully applied, taking care that the plants are never too wet or too dry. It is advisable to allow the compost to become somewhat dry occasionally, because if kept in a constantly wet condition it will soon become sour and stagnant. The best time for repotting Masdevallias is about three months after the plants have flowered, it is then that fresh leaves are pushing up and the roots become active.

The stronger growing Masdevallias are vigorous rooting plants, and so require a good amount of space, while the smaller and dwarf kinds prefer rather small receptacles. Make the pots or shallow pans nearly half-full with materials for drainage, and for a compost use chopped osmunda fibre and sphagnum moss in equal proportions, adding a little coarse leaf soil and sufficient small crocks to keep the whole porous. Pot each plant with moderate firmness, but not so tightly that water will not pass rapidly

through the whole mass of compost. The different species and varieties of the Chimæra section of Masdevallia, of which a few may be mentioned in Chimæra, bella, Rœzlii, Backhouseana, nycterina, Wallisii, produce very curious and weird-looking flowers, but with a good sized lens they appear wonderful, and at the same time, very beautiful. They are well worth including in any collection. These plants produce their flowers like a Stanhopea—from descending stems, therefore, open shallow teakwood baskets are best for their requirements. No crocks should be used for drainage. A thin layer of coarse osmunda fibre laid over the bottom bars answering the purpose well. Only a moderate depth of compost is necessary, and this should be as advised for the other Masdevallias.

All plants of the Chimæroid section are extremely liable to red spider, especially if at any time the atmosphere be more than ordinarily dry or warm. To keep the plants clean and free from insect pests they should be taken down every bright morning, holding them head downwards over a tank, and well spraying the under side of the leaves with tepid rain water. Grow the plants with their leaves well up to the roof-glass and in the same temperature as previously advised for M. tovarensis. While again alluding to the last named species, a reminder crops up that although the plants as a whole generally require periodical fumigation, inexperienced growers should be warned that it is advisible to always remove the plants of M. tovarensis when so doing, especially when using XL All compound, as the flowers soon turn from their pure-white to a pinkish shade. W.H.W.

Epidendrum cochleatum.—This was one of the few epiphytal Orchids known to Linnæus, and the first on record to flower in England, which it did in the Royal Botanic Gardens, Kew, in 1787.

Rain-Water for Orchids.—It is not possible to over-estimate the importance of rain-water for Orchids, and an abundant supply should always be at hand. Most houses have tanks placed under the staging, and these are generally large enough during the winter season, but when summer time comes, and a drought as well, the supply is soon exhausted, and unsuitable water from other sources has to be used. It is not every amateur who can afford to erect a large range of glass and accompanying buildings, but where such has been constructed the need of an abundant supply of water has generally been thought of. Large tanks are sometimes constructed under the floor of the potting shed, and water from these is pumped into smaller tanks in the houses, where it is allowed to remain until sufficiently warm for use. During the summer months, the supply of rain-water should be reserved for the actual needs of these plants, using other available supplies for the purpose of damping-down the houses.

ORCHIDS AT ST. ALBANS.

RIGHT back to the early eighties, when Orchid species reigned supreme and hybrids were yet unknown, the name of Sander was already honoured throughout the world of Orchids. Collectors were despatched to all localities likely to yield meritorious plants, and to this day their dangerous journeys and trying experiences are full of interest. Messrs. Sanders still preserve no less than five thousand letters that were written by various collectors when searching for plants in distant lands; the earliest bears the date 1875. No one can estimate the amount of information that still lies hidden in these bundles of botanical treasures. Let us hope that one day they will be published as a fitting record of the great work undertaken by the late Mr. Frederick Sander, V.M.H., who will always be remembered as the Orchid King.

Some of our oldest amateurs can recall the immense auction sales held on behalf of this firm by Mr. J. C. Stevens and by Messrs. Protheroe & Morris. A complete series of the various sale catalogues, commencing with the year 1881, is carefully preserved, and as the prices realised are marked against each lot, the record is indeed a most interesting one. A large number of Reichenbach's letters are carefully preserved, while the walls of the office are covered with photographs of some of the wonderful groups staged at the principal exhibitions, as well as with portraits of many noted amateurs of the past. Another point worthy of note is that in an adjoining building was printed the letterpress of "Reichenbachia," one of the largest and most important books yet published on Orchids.

Passing through the noble entrance hall, one enters the conservatory, where in a central position stands a huge specimen of Sobralia macrantha alba, with over 400 of its reed-like stems, and which recently carried no less than 300 flowers. Near by is a grand specimen of the remarkable Vanda Lowii, and another of the more recently introduced Vanda luzonica, from the Philippines.

There are no less than forty houses entirely devoted to the cultivation of Orchids, the first block of houses being connected by a corridor 300 feet in length. Cymbidiums are grown in immense quantities, and a house 250 feet in length is entirely filled with hybrids obtained from the best parents. About one-half of these plants have flowered, one of the most promising crosses being C. Erica (Pauwelsii × grandiflorum). Of the Cymbidium species there are several noteworthy varieties, also a vigorous plant of C. Devonianum with three spikes of flower. Big batches of Oncidiums include recent importations of Marshallianum, varicosum, crispum and Forbesii, while other members of the genus comprise the pretty pulvinatum and Harrisianum. Maxillaria Sanderiana is always regarded as the grandest

species of the genus, and it is not surprising to find it well cultivated in this establishment.

In the Dendrobium house can be seen an extensive series of the popular hybrids, including the handsome Cybele and many brightly coloured varieties of xanthocentrum. Dendrobium species consist of many fine plants, the dark coloured forms of nobile still being among the best. Recently imported masses of D. linguiforme are just recovering from their long journey, while D. atroviolaceum looks well when covered with flowers. Another house is full of the large-flowering Cypripediums, in fact, it forms a little colony of giants, for here are grown the handsome C. Troilus, Goliath, Dreadnought, and others of the kind. Cyp. St. Alban is of medium size, but of an unusually rich colour. No Cypripedium has achieved greater popularity than insigne Sanderæ, and thousands of plants are here grown and well flowered during the autumn and early winter months. Cyp. Godefroyæ is not one of the easiest members of the genus to cultivate, but a suitable place has been found for it at the end of one of the Cattleya houses, along with concolor and bellatulum.

In days gone by, imported Cattleyas were much in request, and hundreds of thousands of plants were annually imported by Messrs. Sanders. A comparatively small importation of Cattleya labiata was received last September, the plants travelled well, and many still bear from eight to ten leaves on the native bulbs. New growths were made during the past winter, and these are now flowering, an unusual event at such an early period of the year. Cattleya hybrids are cultivated in very large quantities. There are immense batches of such popular kinds as Fabia alba and Hardyana alba, also of Lady Veitch and Avalanche, the two latter being wholly white. Cattleya Fabia has for many years past been recognised as one of the best of the autumn flowering hybrids, and it is pleasing to see the many dark varieties here grown. Another autumn hybrid is C. fulvescens. Albino Cattleyas occupy much space in another large house, and comprise such well-known hybrids as Helvetia, Mrs. Gratrix, Freda Sander, Snow Queen, and several fine whites derived from C. Dusseldorfei Undine. Of the white flowers having colour on the labellum, one of the prettiest is to be seen in C. Kienastiana var. Sanderæ (Dowiana × Lueddemanniana). Large batches of Cattleya Mossiæ in the white varieties are also cultivated. There is still a steady demand for the best known Cattleya species, and it is necessary to cultivate many plants of Mossiæ, Warneri, Trianæ, Schroderæ and Lawrenceana. Lælia tenebrosa is also grown, as well as the distinct Walton Grange variety.

One of the best of winter-flowering species is Lælia Gouldiana, of which there is a large stock. Years ago, it was suggested that this plant was a natural hybrid between anceps and autumnalis, and to disprove the

suggestion Messrs. Sanders made the cross, the resulting flowers being quite different. Brassavola Digbyana has been so much used as a parent that the stock of cultivated plants is almost non-existent, but a recent importation has given a large number of useful additions, and it is expected that the strongest will flower during the present year and be available for hybridising purposes. One of the largest houses is devoted to Brassavola hybrids, and many excellent crosses and varieties make a fine show with their large flowers and deeply fringed lips. Brassocattleya Boadicea may be singled out as a large flower of excellent coloration.

Vanda cœrulea is not one of the easiest plants to cultivate, nevertheless there are many plants here that have done good service for several past years. A recent importation is expected to yield flowers during the coming autumn. Various species of the Phalænopsis genus flower well under the treatment adopted, which is principally abundant heat and moisture. Angræcum Eichlerianum succeeds well, and on account of its scandent habit is grown on a long teak-wood raft. Another member of the genus is A. gracillipes, which even when not in flower is a handsome plant. Recently imported plants of Vanda Hookeriana possess quite a different habit, and should flower well under the treatment of full light. Mention may here be made of Dendrobium Bronckhartii album, probably the only plant known of its kind.

Passing through several houses, in one of which are large quantities of Cypripedium Maudiæ, Curtisii Sanderæ, and Gowerianum Sanderæ, the visitor arrives at a seedling house containing over 15,000 Cymbidium seedlings, many of them derived from Ceres. All these will be required in the near future, as the demand for Cymbidium hybrids increases each year. In another warm house is a recent importation of Oncidium Papilio, the Butterfly-like blooms of which are always admired, and bring this species in demand. Lycaste Skinneri is always appreciated by amateurs, and pretty varieties are quickly picked up as they come into flower. They grow here under fairly cool conditions. Another species that is not as well-known as it should be by amateurs is Odontoglossum Oerstedii, for it flowers almost continually throughout the winter months. Of the curious Nanodes Medusæ there are many fine plants, and also some of the newer N. Lankesteri, while Epidendrum vitellinum can be seen in dozens of healthy examples.

Læliocattleyas are cultivated in immense quantities, as may be expected, for they comprise many of the most beautiful hybrids, and have the additional advantage of being easy to grow. It is by no means easy to mention the best, not only on account of their number, but because tastes differ. Some amateurs prefer the dark lipped varieties, while others pick out those having white sepals and petals, and also those having the

golden-yellow colour derived from C. aurea or L. xanthina. Whatever the choice may be, there are tens of thousands from which a selection may be made. Among the most popular is Læliocattleya Schrœderæ, with large flowers having white sepals and petals and a coloured labellum. Note may also be made of Lc. luminosa aurea, in which the sepals and petals are of varying shades of golden-yellow. A very pretty Cattleya hybrid has been produced in Zephyr (aurea × Schrœderæ), the flowers being of a soft rosy-yellow tinge.

The work of raising superior hybrids is always proceeding, and evidence of the careful work done is to be seen in batches of various crosses that include large numbers of either pure-white parents or else highly-coloured ones. Some particularly dark forms of Cattleya Fabia have been crossed with various Brassavola hybrids in order to increase the colour of the latter, and judging from some of the early results success should be obtained in many cases. Miltonias of the vexillaria section are in large batches, and many beautiful varieties have lately flowered. Very great strides are being made in the improvement of this genus, and judging by the present successes the near future will see some astounding forms and varieties.

One of the largest of the houses containing a central stage is filled with a wonderful collection of species, mostly of the so-called botanical kind, but which, nevertheless, are full of interest. There are numerous Bulbophyllums and Cirrhopetalums, a wide range of Cœlogyne species, rare Vandas, and a host of other rarities that always bear close examination when in flower, for the diverse formation and colouring is indeed great. Opposite the door is a fine specimen of Epidendrum Parkinsonianum, with its long drooping foliage of cylindrical shape, and near by, growing on a raft, is Scuticaria Hadwenii, a native of Brazil. At almost every meeting of the Royal Horticultural Society some of the plants from this house are included in Messrs. Sanders' exhibit, where they are much appreciated by lovers of this section.

An immense house is devoted to Odontoglossums; there are thousands of plants of crispum, including a large number of the fine old Pacho type, also of Pescatorei, and many other species. Hybrids are equally prominent, and include numerous blotched forms in all shades of purple and red-brown colourings. One of the most decorative is Odontonia brugensis, with branching spikes of pretty rose-purple flowers. At the time of taking these notes, O. Duvivierianum was in flower, and clearly showed the characters of both parents of this very rare natural hybrid.

Cypripedium seedlings fill up a considerable area of staging, and as evidence of the rapid way in which some plants grow, a plant of Cyp. Cappamagna was pointed out as having been produced from a single growth twelve months ago; it now has six strong growths. Another notable

hybrid is Cyp. Louis Sander, and countless others could be mentioned. It is quite a day's work walking through the different houses, and weeks would be required to take note of all the interesting plants.

Fine specimens are to be seen in Schomburgkia tibicinis, in Vanda Watsonii, and in the best of the older hybrids. But perhaps the house of seedlings will appeal most to the present-day amateurs, for here are tens of thousands of little plants, some of very promising parentage. A batch of seedlings produced by crossing Cattleya Lueddemanniana var. Stanleyi with Læliocattleya Isobel Sander, has already yielded some peculiarly fine results, the lips being very dark, in fact, one was almost blackish-purple.

In a huge Cattleya house are cultivated the larger plants, and some are indeed very fine, one example of Cattleya Enid carried no less than eighteen well-developed flowers. Many pages could be occupied by a list of the various crosses here represented, but space does not permit. A visit to this vast establishment will convince anyone of the immense stock grown, as well as of the extensive nature of the different sections.

Messrs Sanders' *List of Orchid Hybrids* is the recognised authority, and it is gratifying to learn that the Addenda, bringing the List up to date, is already printed and will soon be issued. Sanders' *Orchid Guide* has proved itself a book of considerable utility, and a vastly improved edition is nearing completion for publication at an early date.

R.H.S. LIST OF ORCHID AWARDS.—A new edition of the Royal Horticultural Society's publication giving the awards made to Orchids from the year 1859 to-date, is in course of preparation. The last edition of the "List of Awards," covered the period 1859 to 1915 inclusive.

LOTHIANIA MORDAX.—In the *Gardeners' Chronicle* for March 29th, 1924, Dr. Kraenzlin describes the new genus Lothiania, named in honour of the Marquis of Lothian, who provided the means for Miss Woolward's *Monograph of Masdevallia*. Masdevallia mordax was originally described by Reichenbach, f., in *Flora*, lxix (1886), 559, but Dr. Kraenzlin now makes it the original species in his new genus Lothiania. He states that "the flowers are widely opened like the gaping mouth of some animal, and justify the specific name given by Reichenbach, the more so that the borders of the large sepals bear small teeth. The colour is pale yellow with faint reddish stripes and deep reddish points. The petals and lip are very small as in all Masdevallia-like plants; the lip has three teeth and a small tumour at the base of the middle one. The plant is surely no Masdevallia, but very near to this genus." The accompanying illustration is made from a sketch by the late F. C. Leemann, who detected the plant on the western declivities of the Munchique, near Popayan, Colombia.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassolæliocattleya Edward Rœhrs...	Bc. Mrs. J. Leemann × Lc. Ettrick ...	J. P. Mossman.
Cypripedium Aireworth	Alcimeda × Hera	Mansell and Hatcher.
Cypripedium Alberic	nitens × Lady Dillon	Charlesworth.
Cypripedium Arcadia	Erato × Clinkaberryanum	,,
Cypripedium Biafra	Calypso × Draco	,,
Cypripedium Casella	Erato × aureum	,,
Cypripedium Condor	vill-exul × aureum	,,
Cypripedium Eureka	Lady Dillon × Hera	,,
Cypripedium Joyce	hirsutissimum × aureum	Mansell & Hatcher.
Cypripedium Norman	Bella × selligerum	,, ,,
Cypripedium Rosalie	nitens-Leeanum × aureum	,, ,,
Odontioda Ella	Oda. Charlesworthii × Odm. Dusky Monarch	Charlesworth.
Odontioda Kathleen	Oda. Moyra × Odm. percultum	,,
Odontioda Mecene	Odm. Solon × Oda. Orion	,,
Odontioda Mirella	Odm. Thompsonianum × Oda. Charlesworthii	,,
Odontioda Nona	Joan × Aphrodite	,,
Odontioda The Torch	Odm. ardentissimum × Oda. Sanderæ ...	Sanders.
Odontoglossum Hermione	Lambeauianum × Gatton Emperor ...	Sir. J. Colman.
Odontoglossum Lady Tyrrell Giles...	amabile × Jeanette	,,
Odontoglossum Marion	Amethyst × Mars	McBean.
Odontonia Fascination	Ota. Roger Sander × Odm. Lawrenceanum	Sanders.

LÆLIOCATTLEYA ROVER.—Flowers of this pleasing hybrid come from the collection of C. J. Lucas, Esq., Warnham Court, Horsham. The parentage is Lc. George Woodhams × Lc. luminosa, and it was first recorded in 1922. Flowers of medium size, the petals and labellum rendered attractive by their soft crimson-rose colour.

SALE OF THE ASHTEAD PARK COLLECTION.—Owing to the recent death of Mr. Pantia Ralli, the whole of the Ashstead Park collection is to be sold by auction early in May. This collection, comprising upwards of 6,000 plants, has long been celebrated for the many fine specimens and choice varieties, and a detailed description appeared in our issue for December, 1922. Messrs. Protheroe & Morris announce further particulars in our advertisement pages.

MAXILLARIA CHRYSANTHA.—A recent issue of the *Botanical Magazine* contains a coloured plate of Maxilliaria chrysantha (t. 8979). This plate had been prepared from a plant in the Botanic Garden, Glasnevin, Dublin, where it has been in cultivation under the name M. Galleotiana for many years, having been purchased from Messrs. Sanders in 1891, but its earlier history is obscure. The affinity of this species is with a number of species ranging from Brazil to the Andes of Colombia. It grows on trees and occasionally also on rocks in the Southern part of Minas Geraes. Barbaso Rodriguez records two varieties, var. curtifolia and var. macrobulbosa, whose characters are well expressed in the names, but apparently of little importance.

ROYAL HORTICULTURAL SOCIETY.

March 25th, 1924.

MEMBERS of the Orchid Committee present:—C. J. Lucas, Esq. (in the chair), Mr. Gurney Wilson (secretary), Sir John Rutherford, Bart., Hon. Henry D. McLaren, Messrs. E. R. Ashton, A. McBean, John Cowan, J. Cypher, F. K. Sander, H. G. Alexander, H. H. Smith, Stuart Low, J. Wilson Potter, C. H. Curtis, and H. T. Pitt.

FIRST-CLASS CERTIFICATE.

Odontoglossum eximium, McBean's variety; from Messrs. J. & A. McBean. One of the finest forms of this popular hybrid, the immense flower having the segments developed to a marked degree, the central area of each being covered with a bold reddish-purple blotch. The spike carried six flowers.

AWARD OF MERIT.

Odontoglossum Model (Aglaon × promerens); from J. J. Bolton, Esq., Claygate, Surrey (gr. Mr. S. Lyne). A very pretty result in which the spike carried eight flowers of model proportions, the segments rose tinted and effectively marked with chocolate spots and lines; the labellum roundish and with a yellow area around the crest.

Cymbidium Alexanderi var. Edusa; from the Hon. Henry D. McLaren, Bodnant, N. Wales (gr. Mr. F. C. Puddle). A handsome addition to this section, the erect spike bearing six large flowers, blush tinted and with reddish markings on the front lobe of the labellum.

Cymbidium Kittiwake, Holford's var. (Gottianum × Dryad); from Lieut-Col. Sir George Holford, K.C.V.O., Westonbirt, Glos. (gr. Mr. H. G. Alexander). One of the prettiest of Cymbidium hybrids, the porcelain-white flowers are of neat formation, the labellum effectively marked with reddish spottings.

Brassocattleya The Globe (Bc. Cliftonii magnifica × C. Trianæ "The Baron"); from Messrs. Armstrong & Brown. A most promising hybrid in which the well-known characters of the former parent are perpetuated, but in an improved form, the flower being roundly shaped, of a pleasing rose-pink colour, the large labellum deep mauve-purple and with an orange-yellow disc.

BOTANICAL CERTIFICATE.

Ophrys atrata; from Major Albert Pam, Wormley, Bury, Broxburne (gr. Mr. L. Streeter). Several well-cultivated plants of this species were shown in a shallow pan, and bearing a total of eleven erect spikes of flowers, the labellum being darkly coloured. They had been collected by the exhibitor in Syracuse.

GROUPS.

A Silver-gilt Banksian Medal was awarded to Messrs. Stuart Low & Co., for an extensive exhibit containing many rare species, such as Cirrhopetalum Collettii, Masdevallia Shuttryana, and Trias picta. Among the popular kinds were specimen plants of Cymbidiums, carrying several many-flowered spikes, as well as a nice example of Cymbidium Devonianum with a pendulous spike. Dendrobium Brymerianum carried a number of its golden flowers, and there were many cut spikes of various Phalænopses. In the centre was a grand plant of Schomburgkia undulata, and on either side various Brassocattleyas and attractive Cypripediums. Odontioda Lerna, Jarvisbrook variety, had flowers of an intense blood-red colour.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Banksian Medal, for a neat group containing the pretty Odontonia Dora, with rose-coloured flowers, fine examples of Lycaste Skinneri alba, Cymbidium Lady Colman, and Odontioda Purple Princess. Odontoglossum *Zena*, with gold and chocolate flowers, as well as some finely grown Cypripediums were also noticed.

Messrs. Sanders, St. Albans, received a Silver Banksian Medal, for an exhibit in which Læliocattleyas were prominent, a noteworthy example being Lc. Royal Sovereign var. ignea, in which the colour was intense orange-red with a crimson labellum. Dendrobiums looked well in several varieties of xanthocentrum and nobile virginale, while Cymbidiums were represented by the elegant Ceres. Cattleyas included Avalanche, pure-white, as well as Dawn and Snow Queen.

Lieut.-Col. Sir George Holford, K.C.V.O., exhibited Cymbidium Bustard magnificum, of deep greenish colour, the front lobe of the labellum bearing a V-shaped blotch of crimson.

Messrs. J. & A. McBean, staged Cymbidium Alexanderi var. Prince Imperial, a specially fine form, Lycaste Skinneri album, with three large pure-white flowers, and Odontoglossum Fascinator aureum, with a spike of 13 medium-sized flowers of golden-yellow colour.

R. Gerrish, Esq., Milford Manor, Salisbury, exhibited Odontoglossum J. H. Knight, with flowers of claret-purple, margined with white.

J. J. Joicey, Esq., The Hill, Witley, exhibited Odontioda Pekœ (Oda. Coronation × Odm. splendidum), bearing a spike of nine flowers, with delicate scarlet freckling on the segments, the petals more marked than the sepals.

Messrs. Armstrong & Brown staged Cattleya White Queen (Trianæ alba × Irene), a fine white flower with up-standing petals of good shape.

G. F. Moore, Esq., Bourton-on-the-Water, Glos., exhibited an old Cymbidium bulb, without roots or leaves, but with a flower on the apex of a spike produced from a basal bud.

April 8th, 1924.

Members of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), S. W. Flory, H. T. Pitt, H. H. Smith, Chas. H. Curtis, Fred. K. Sander, J. E. Shill, Jas. Cypher, A. McBean, C. J. Lucas, John Cowan, T. Armstrong, Rich. G. Thwaites, J. Wilson Potter, and Stuart H. Low.

AWARDS OF MERIT.

Læliocattleya Orange Blossom var. June (Lc. Elinor × Lc. Trimyra); from Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt, Glos. (gr. Mr. H. G. Alexander). A beautiful result, the well-grown plant carrying three spikes, each with three flowers of medium size, in colour bright orange-yellow, tinged with gold, equally suffused throughout all the segments.

Odontoglossum Duke of York (percultum × illustrissimum); from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). A fine improvement on both parents, and an advance towards the desired blue-tinted flower. The segments roundly formed, and bearing solid blotches of an unusual violet-rose colour, in which a bluish tinge is visible.

Wilsonara Wendy var. Cardinal (Odm. Lambeauianum × Oncidioda Cooksoniæ); from Messrs. Charlesworth & Co. This interesting trigeneric hybrid bore an erect spike of 14 large flowers, the segments broadly developed and entirely rich cardinal red in colour.

Orchis papilionacea; from Major Albert Pam, Wormley, Bury, Broxburne (gr. Mr. Streeter). Several examples of this terrestrial species were shown growing in a shallow pan. The broadly developed labellum is prettily lined and marked with deep mauve.

Odontoglossum crispum var. Mary Gratrix; from Messrs. Sanders. An imported plant of the best Pacho type. The spike carried nine large flowers of excellent form, white, with a few spots on the labellum.

Cymbidium Coningsbyanum var. Mammoth (grandiflorum × insigne); from Messrs. Sanders. A grand hybrid bearing a tall spike of 18 unusually large flowers, cream coloured, the sepals tinged with rose-pink, the openly displayed labellum neatly marked with numerous small and darkly coloured spots.

CULTURAL COMMENDATION.

To Messrs. Sanders, for the above plant of Cymbidium Coningsbyanum, which exhibited a fine condition of meritorious cultivation.

To Mr. F. Streeter, gardener to Major Albert Pam, for Ophrys lutea, or closely allied species, several robust flowering plants, of which were staged together in a shallow pan.

GROUPS.

Messrs. Sanders were awarded a Gold Medal for an extensive exhibit, containing numerous Cymbidiums, the fine specimen plants with their

many-flowered spikes being particularly attractive. Cymb. Miranda var. Golden Oriole, with flowers of a pleasing apricot-yellow colour, and a grand plant of Cymb. Pauwelsii var. Bruges Belle being specially noteworthy. Among Cypripediums, a fine hybrid was seen in The Duchess var. Sphere, while Brassocattleyas were represented by fulgens, of good colour, and Dendrobiums by Blackianum. Lycaste Skinneri var. Rajah and Cymbidium Devonianum were both in fine form.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), received a Silver-gilt Banksian Medal for an excellent exhibit of choice species and hybrids. The former included several varieties of Lycaste Skinneri, of which mention may be made of hellemensis and alba magnifica, the elegant Cirrhopetalum robustum, Cœlogyne Lawrenceana, and Masdevallia Gargantua. Among the hybrids were several varieties of Brassocattleya Gatton Snowflake, with large white flowers, also of Bc. Mildred and the choice Bc. speciosa. Superb Læliocattleyas were staged in Lc. J. F. Birbeck, with three immense flowers, and in Lc. Eldorado.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver-gilt Banksian Medal for a fine collection, embracing the attractive Odontonia Ceres, with large bright yellow flowers, Cirrhopetalum picturatum, a well-flowered plant of Odontoglossum Edwardii, as well as O. crispum xanthotes. Handsomely blotched Odonts. were seen in Maillardianum, with reddish tints, and in O. St. George var. Albion. O. Conqueror had the reddish petals flaked wlth white at the margin.

Messrs. Stuart Low & Co. were awarded a Silver Banksian Medal for an interesting exhibit, containing the elegant Odontoglossum Woodroffeæ, a richly coloured variety of Bc. Mrs. J. Leemann, Cattleya Schrœderæ var. Hercules, a fine flower, and C. Enid alba. Among the species were Cirrhopetalum cornutum, the popular Angrœcum sesquipedale, Stauropsis gigantea, rarely seen, and Megaclinium falcatum. Cymbidiums and Dendrobiums were finely flowered, and several species of botanical interest occupied the front row.

Messrs. Charlesworth & Co. obtained a Silver Banksian Medal for a choice selection of hybrids, including the beautiful Miltonia Venus and M. William Pitt. Novelties were staged in Odontonia Thais, with a large flower of deep-rose colour, and in Ota. Sheila, of reddish tint. Charlesworthea nobilis, chocolate coloured, the petals tipped with gold, was attractive, as also were several blotched Odontoglossum hybrids. The scarce Dendrobium bigibbum, along with D. Thwaitesiæ and D. atroviolaceum stood out prominently, while Angrœcum Sanderianum and Masdevallia Chimœra attracted attention.

W. van de Weyer, Esq., Corfe Castle, Dorset, exhibited an Ophrys species from Portugal.

Messrs. Flory & Black staged Cattleya Prince Shimadzu var. magnifica, a grand flower, richly coloured, the expansive labellum deep purplish crimson.

R. Gerrish, Esq., Salisbury, staged Odontoglossum Amillus, of distinct characters.

Lieut.-Col. Sir George Holford, K.C.V.O., exhibited the elegant Cymbidium Merlin, to which a First-class Certificate had previously been given.

ONCIDIUM FLEXUOSUM.—This graceful little species is largely grown for decorative purposes—exhibitors finding it a great acquisition, being so light and elegant. It is generally grown in a stove, but grows there much less robust than when given a cooler treatment. I saw a specimen in an Odontoglossum house the other day which deserved a Cultural Certificate, such enormous, fine, fat bulbs it had as to leave no doubt whether the cool treatment was suitable or not.—*H. A. Burberry, June*, 1900.

PERISTERIA ELATA.—Plants that are not producing flower spikes will now be starting into growth, and potting should be done soon after the young growths get away. It is well to pot them at least every other year, as they soon exhaust the material when growing freely. The compost used should be of a fairly retentive nature, such as one composed of one half loam and the other half made of equal parts of peat and leaf soil, mixed with plenty of small crocks and coarse sand. Afford a good drainage, filling the pots one-third with crocks and rhizomes, and cover with rough material to prevent the fine particles working down. Potting should be done rather firmly, keeping the surface of the compost a little below the rim of the pot. A great mistake is often made by placing this grand Orchid in too shady a position. It requires a stove temperature, and it is essential to shade during bright days. If it can have the benefit of strong light and heat, with an atmosphere well charged with moisture during the growing season, it will thrive satisfactorily. Water should only be given for some time as the plants become dry, but when the growth is attaining its full dimensions, and swelling its new pseudobulbs, copious supplies will be beneficial. Flowering plants will require a fair amount of water whilst developing their spikes; the one point to observe being that the pseudobulbs are not allowed to shrivel; otherwise the new growth will be retarded from the start. It is a great pity that we so seldom see this and many another really magnificent Orchids in our present day collections. When the time again comes that Orchids are grown by amateurs for their beauty rather than for their value, many of the old-time favourites will once again be popular.—*W. P. Bound, May*, 1907.

MANCHESTER ORCHID SOCIETY.

March 14th, 1924.

MEMBERS of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A Burns, A. Coningsby, D. A. Cowan J. Cypher and H. Arthur (secretary).

First-class Certificate.

Dendrobium Wardianum album magnificum, the largest variety of the type, from S. Gratrix, Esq.

Award of Merit.

Odontoglossum crispum var. Lady Isabel, O. crispum var. Gibraltar, and Cattleya Stuartii var. Purity, from S. Gratrix, Esq.

Cultural Certificates.

To Mr. J. Howes, for Odontoglossum hybrid, Oda. Viscount Lascelles, and Cattleya Douai magnifica.

To Mr. A. Burns, for Lycaste Skinneri var. Modesty.

To Mr. G. Giles, for Lycaste Skinneri alba.

Groups.

S. Gratrix, Esq., was awarded a Gold Medal, for a group of Dendrobiums in great variety, including Lady Colman and Keeling's variety of nobile. Various Odontoglossum hybrids and some fine Brassocattleyas were also exhibited.

Mrs. Bruce and Miss Wrigley were awarded a Large Silver Medal for an exhibit containing the fine Cypripedium Desdemona, Haddon House variety, Cyp. Ursus, and Cyp. Ernest Read. Other meritorious plants were Odm. Llewellyn var. Mrs. Hanmer, Oda. Lerna J. Hanmer, and Lycaste Skinneri alba.

Capt. W. Horridge, Bury, staged several plants of an unrecognised species collected by him in West Africa.

Messrs. Cypher & Sons were awarded a Large Silver Medal for a group of Dendrobiums in variety, as well as fine forms of Lycaste Skinneri, rare Masdevallias and some pleasing Miltonias.

Messrs. Charlesworth & Co., staged Cypripedium Eureka, C. Radium, and C. Commodore var. Rex.

Messrs. A. J. Keeling & Son exhibited Dendrobium xanthocentrum and D. Cybele perfectum, both pleasing hybrids.

Messrs. Sanders staged the new Odontonia Fascination.

March 28th, 1924.

Members of the Orchid Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, J. Cypher, J. Evans, G. Giles, Capt. W. Horridge, J. Howes, A. Keeling, E. W. Thompson, J. Whitham and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES.

Vuylstekeara Brewii, Haddon House var., a large flower of intensely dark-maroon colour, the lip of lighter shade and strongly veined; from P. Smith, Esq.

Odontoglossum Doreen var. The Belle, a fine variety with petals of deep reddish-chocolate shade, margined with white, sepals heavily blotched, lip large and flat; from P. Smith, Esq.

Odontoglossum crispum, West Point Model, a full, round, white flower of good substance, the flat lip slightly blotched; from Mrs. Gratrix.

Odontoglossum crispo-Solon var. Gratrixiæ, a perfectly formed flower, heavily and evenly marked; from S. Gratrix, Esq.

AWARDS OF MERIT.

Odontioda Renown var. Victor (Oda. Coronation × Odm. Victory); from A. Hanmer, Esq.

Odontoglossum Laurentia var. lilaceum (Jasper × Olympia); from P. Smith, Esq.

Odontonia Thais (M. Bleuana × O. Aglaon); from Messrs. Charlesworth & Co.

GROUP.

Messrs. Cypher & Sons were awarded a Silver Medal for a fine group of various Orchids.

ODONTOGLOSSUM GRANDE is a general favourite, and should be grown in every collection, especially where quantities of flowers are required for cutting. They should be growing well now, and should be examined, and those that need potting should be done when the young growth is about half made. If handled with care they will flower the same season as potted. They are not particular where they grow so long as it is an airy position, with a fair amount of sunlight, and a temperature of about 60°. This is another strong-rooting species, and the roots are also very brittle, and require great care in repotting. If the roots adhere fast to the pot they are growing in, smash the pot, and the pieces can then easily be taken away without breaking the roots. All old useless back bulbs should be taken away, leaving two or three behind the young growth, according to the strength of the plant. A compost should be used of three parts Osmunda fibre and one part leaves, with very little moss scattered in. They should be potted firmly, and if given a good shift will not require much attention for two or three seasons, and they give finer flowers when left undisturbed. Slugs are very fond of the young growths and roots, and a sharp look out should be kept for them, as they ruin a young growth in a night.—*W. H. Morgan.*

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Oncidium Harrisonianum
Oncidium Marshallianum
Oncidium Papilio majus
Oncidium barbatum
Rodriguezia secunda
Catasetum tridentatum

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To face p. 160.

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The Collection was reviewed in the ORCHID REVIEW, December, 1922, pages 358-367.

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Edited by GURNEY WILSON, F.L.S.

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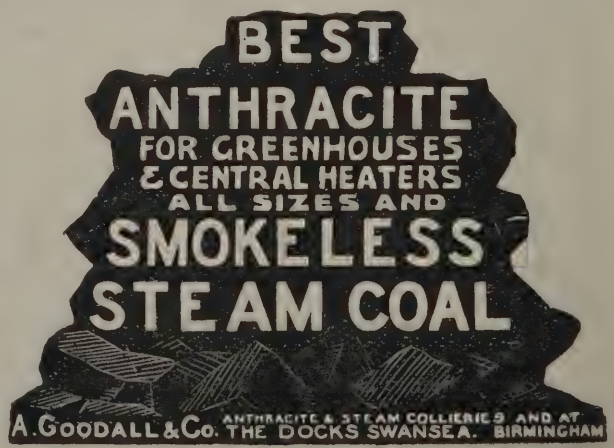

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THE ORCHID REVIEW.

VOL. XXXII.] JUNE, 1924. [No. 372.

NOTES.

MR. ALBERT C. BURRAGE.—General pleasure will be felt on learning that Mr. Albert C. Burrage, the worthy President of the Massachusetts Horticultural Society, and also of The American Orchid Society, has been elected an Honorary and Corresponding Member of The Royal Horticultural Society.

CENTENARY OF BENEDICT RŒZL'S BIRTH.—The Horticultural Society of Prague will celebrate the centenery of the birth of Benedict Rœzl by holding a horticultural meeting at Prague on August 12th, 1924, when an account of Rœzl's life will be given by Dr. Domin, who has been elected chairman of the official proceedings. Rœzl's birthplace at Horomeric, as well as his grave at Tynice, in Bohemia, will be visited, and a memorial speech will be delivered at his statue near the Prague Botanical Gardens. An exhibition of plants will take place at Prague from September 20th to October 5th, 1924, when it is expected that examples of Orchid species collected by Rœzl will be on view.

DENDROBIUM NOBILE VAR. RICHARD ASHWORTH.—From Dr. Edward Roberts, Penywern, Aberystwyth, we have received flowers of this very pretty variety of D. nobile. When exhibited at the Manchester Orchid Society, May 10th, 1900, it was described as a new variety, something in the way of Ballianum, but with longer sepals and petals, and the labellum more closed. D. nobile var. Ballianum is white, with the slightest tinge of colour at the apex, disc of the lip faintest rose-violet surrounded by a light primrose zone. Dendrobiums such as these are well worthy of careful cultivation and judicious propagation, more especially as importations are now seldom received.

LÆLIA HARPOPHYLLA.—This species has cylindrical stem, from 12—18 inches in height, and like others of the long-bulbed section is generally a difficult subject to cultivate successfully for any prolonged period. On this account it is of interest to mention a plant which has just flowered in the collection of C. J. Lucas, Esq., Warnham Court, Sussex, where it has been

cultivated ever since 1893. The specific name is derived from the Greek for "sword-leaf" in allusion to the shape of the leaves. The flowers are bright cinnabar-red in colour, and have been much used in the past for producing hybrids of bright colour, but the results leave much to be desired so far as the width of the segments is concerned.

MORMODES.—The most striking floral peculiarities in Mormodes are seen in the column and lip, especially in the first-named organ, which is twisted one-quarter round so as to cause the anther to face sideways; the beak of the column, or rather the small hinge by which the anther case is articulated with the column is so sensitive that when the beak is touched ever so lightly, the whole of the pollinary apparatus is released and tossed upwards with a jerk to some distance. The labellum, too, is a remarkable organ, and although a polymorphous one it always has the same relative position to the column, that is, it is bent upwards and inwards, and arches more or less over it.—*Veitch, Manual of Orchidaceous Plants.*

ORCHIDS OF TROPICAL AMERICA.—*Schedulæ Orchidianæ* No 7, comprises Additions to the Orchid Flora of Tropical America, with illustrations of Pleurothallis and observations on noteworthy species, by Prof. Oakes Ames. With regard to Oncidium floridanum, the author states that "the history of this species is rather interesting. The original specimens were collected by A. A. Eaton on November 13th, 1903, near Brown's Homestead, in Dade County, Florida. The plants were in fruit, and a few withered flowers still adhering to the branches of the compound raceme. From this very unsatisfactory material I confused the species with Oncidium sphacelatum, Lindl. In May 1904, Eaton collected the species again, this time near Black Point Creek, and in March, 1905, he discovered another station at Coot Bay, east of Whitewater Bay, in Monroe County. Several of the plants flowered in my greenhouse, from which specimens were sent to R. A. Rolfe for confirmation of the belief that the species was undescribed. Mr. Rolfe was unable to identify the specimens, and suggested that proposals regarding them be delayed until the Reichenbachian Herbarium should be unsealed. He feared that some of the ambiguous species described by Reichenbach might be conspecific with the Floridan species. In the preparation of an enumeration of the Orchids of the United States and Canada, it has been necessary to take up again the identity of the species. As I have been unable to ascribe it to any described species, I have proposed for it the name given above." A valuable and attractive feature of this publication is the excellent quality of the plates, of which no less than twenty are given, the genus Pleuarothallis being represented by analytical drawings of over forty species.

EPIDENDRUM PUMILUM AND E. TONDUZII.

By C. H. LANKESTER, Costa Rica.

OF the group of Epidendrum, of which E. Endresii is the finest and best known, there are two others in Costa Rica, one with inconspicuous deep mauve flowers, the whole plant deep purple-green and apparently very rare, the other, known to the writer from two widely separated localities, may justify the two names quoted.

Dr. Schlechter cites his E. Tonduzii as synonymous with Rolfe's E. pumilum, which, if it be the form seen by myself some years ago at an elevation of about 8,000 feet on the south slopes of Irazu, may render these two plants valid species. A collection of plants made in April of this year above Zareero (western spurs of Poas, 7,500 ft.), includes several of this type which have just flowered and, to memory, are sufficiently distinct from the Irazu form to warrant separation.

Sepals and petals are pale green, column and lip white, the latter having a small violet blotch on the front lobe at the centre of the constricted part, rostellum bright orange. The plant is smaller and more compact, while the leaves are of a brighter green than in E. Endresii. It is possible that their range may overlap, though the writer has not found them together. The localities are similar, and both plants survive the incursion of man, as pastoral development occurs only in the regions they inhabit; normally the trees left for shade and growing fence-posts suffice to carry on the species, which can adapt themselves to loss of the surrounding forest. Many tenderer plants succumb, or survive only as depauperate relics.

EPIDENDRUM HANBURII.

AN interesting Epidendrum has recently flowered in the Orchid collection of Sir Herbert Leon, Bart., of Bletchley Park, where it has been known as E. Hanburyanum. The species was originally described by Lindley who gave its habitat as Mexico, but apparently has never been common in cultivation, though its flowers are certainly attractive and a well-flowered spike is most effective.

Individually, the flowers are nearly two inches across. The sepals and sphathulate petals, undulated on the margins, are dull purplish-brown in colour and in a strong light appear as if shaded with dusky-gold. In clear contrast is the lip wholly of a light rose-purple with crimson radiating veins, deepest centrally; the front lobe rounded, undulated on the margin, the side lobes inclined forwards and over the column.

In habit it somewhat resembles E. nemorale and E. macrochilum, but the pseudo-bulbs are darker in colour and the foliage much more coriaceous

than in the first named. The foliage is more narrow than in E. macrochilum and though the flowers are not as large as in that species compensation is derived from the greater number of flowers on the spikes, which are upwards of 2ft. in length.

The plant under mention has been in cultivation at Bletchley for many years, having been originally procured from Messrs. Sanders of St. Albans. Like the other Epidendrums in the same section it prefers to be hung near the glass in the Cattleya house and makes its largest bulb near or over the edge of the pot or pan. E.C.

ORCHID PROPAGATION BY BULBILS.

BY HENRY MOUSLEY.

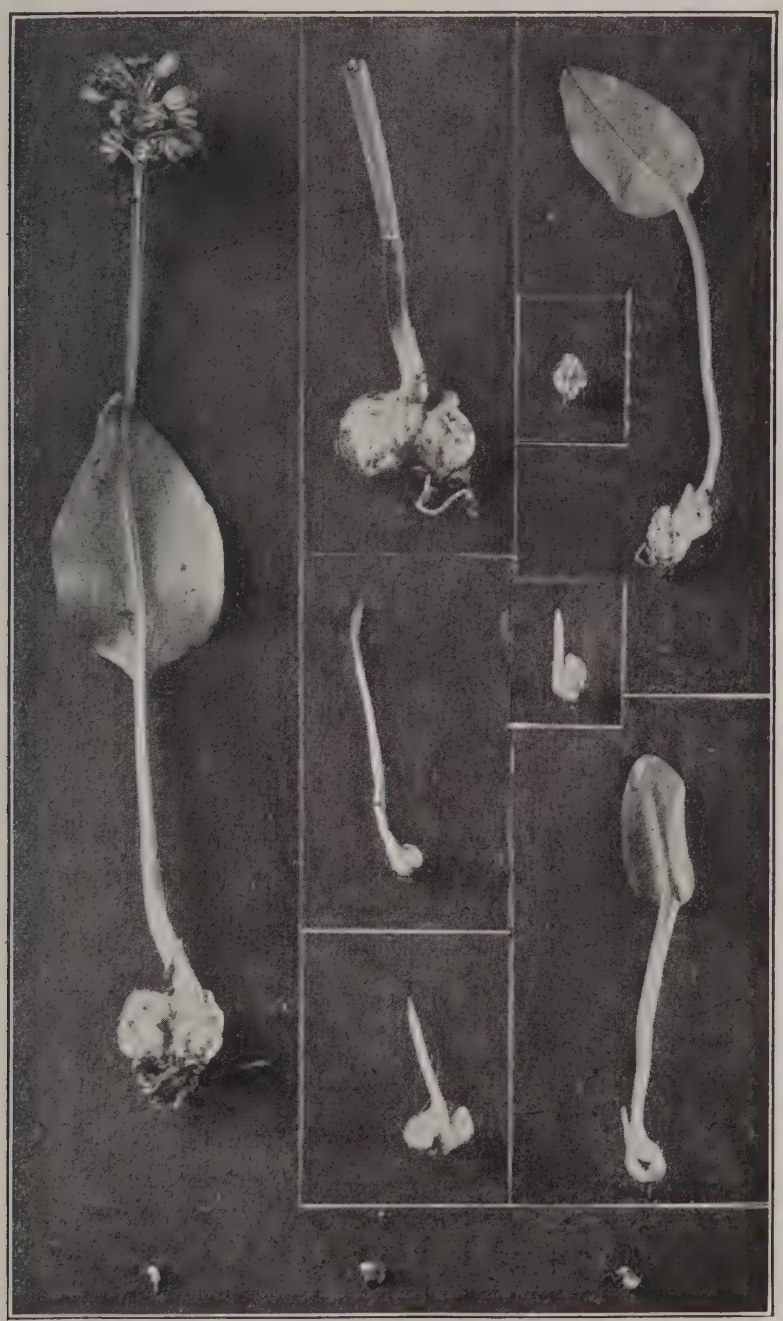
IN the *Orchid Review* for October, 1921, p. 112, there is a short note on Orchids propagating by bulbils, attention being drawn to the case reported by Harriet A. Nye in *Rhodora*, vol. vi, 1904, p. 79, where this lady had observed some of these bulbils underneath the loose outer coat of the tuber of a very fine specimen of Microstylis ophioglossoides (Malaxis unifolia), measuring 28 cm. in height, which she had found at Fairfield Center, Maine, on July 30th, 1903.

Ever since reading the above, I have kept a sharp look out for this phenomenon when coming across plants of this species, but it was not until July 29th, 1923, that I was successful. On that day I discovered a few plants growing somewhat near one another, which had these bulbils in all stages of development, from the three at the foot of the reproduced photograph, about the size of a pin's head, to the two on the right-hand side, each of which has produced a leaf. It was almost impossible to dig up the plants and send them to be photographed without these bulbils becoming detached from the mature tubers, but in one case—the top central figure—I was successful, and the little bulbil there appears, resting naturally on the top of the tuber, just as it was found. They were exactly as described by Harriet A. Nye, i.e., pearly white, and closely resembling small kernels of rice, with no regularity as to their position on the mature tubers.

I also agree in the main with what this lady says regarding M. unifolia being a shy seeder, although I must say I have found colonies where many of the plants bore a large number of capsules, the one in our reproduced photograph apparently not being a particularly shy seeder. I have been told that M. unifolia, or the Green Adder's Mouth, grows as a weed in New Brunswick. I cannot say exactly the same of it here, although it is very well distributed, and can be found almost anywhere, in very wet, as well as very dry situations, such as knolly upland pastures, where the ground

generally gets baked as hard as a brick in the summer, and where my plants were found.

The extreme height given in "Gray's Manual," 7th ed., is 22 cm., and I have only found two plants exceeding this height, the tallest being 25.5



MALAXIS UNIFOLIA. ORCHID PROPAGATION BY BULBILS.

cm., and the other 23 cm. The average height of sixty-five measured plants comes out at 13.2 cm., or 3.5 cm., taller than the mature specimen in our photograph, which is natural size, as well as all the other figures.

I am again indebted to Dr. M. O. Malte for the photographs, which were taken by the Geological Survey at Ottawa.

ORCHIDS AT "PITLOCHRIE," ST. ALBANS.

THE many healthy plants, both of species and hybrids, in the collection of Leonard Dixon, Esq., "Pitlochrie," St. Albans, are further evidence that Orchids can be grown successfully by amateurs with comparatively small gardens. Although the glass houses are by no means extensive, most promising results have been obtained, while the quantity of flower yielded during the past few months has been a source of much pleasure to the owner. For example, Dendrobium aureum bore no less than fifty flowers on a few of its bulbs, while D. nobile var. Harefield Hall carried a number of well-formed and richly coloured flowers. One of the prettiest of Dendrobium hybrids is here cultivated in D. xanthocentrum, which is believed to be a variety of D. chlorostele, the central area of the lip being bright orange-yellow, hence the specific name.

Lycaste Skinneri is represented by several charming varieties, including alba, pure-white, and delicata, with pale pink flowers, while others are distinguished as Gerald and Ronald. Of the popular Cymbidiums, a plant of Pauwelsii produced a spike of over thirty flowers, which lasted for many weeks in perfection, and is of interest, for it came from the celebrated collection of the late Mr. Leemann.

Cattleyas are cultivated in the warmest end, and comprise the elegant Hardyana alba as well as the fine form of Loddigesii known as Stanley's variety. Among the Odontoglossums is a plant of the renowned crispum Lucianii, also of crispum Ronald, a fine white flower of excellent shape, while there are several robust examples of pulchellum with wax-like flowers, a nice variety of Pescatorei and the pretty Rossii majus. Guatemalan Orchids are represented by O. Uro-Skinneri and Mexican species by O. citrosmum and its variety album. The latter requires dry treatment during the winter months so that the flower spikes may be encouraged to form along with the new growth. Mr. Dixon achieves success in flowering this plant well. Oncidium concolor appears to grow well in this house, and its bright clear yellow flowers are appreciated considerably.

Many Cypripediums grow admirably on the side staging. The species include the elegant Curtisii var. Sanderæ, while among the hybrids are delightful varieties of Bianca, Rossetti, and Alcibiades Illustrious. Favourites in the genus are Cypripedium Gowerianum var. Mrs. F. Dixon; Maudiæ, part of the plant that was in the Dell collection fifteen years ago; and Gwen Dixon, to which an Award of Merit was given when exhibited by Mr. Dixon at the Royal Horticultural Society, November 14th, 1922. The tall dorsal sepal is pure-white, except for a small green area at the base. One of Mr. Dixon's favourites is Cyp. Alma Gevært, a beautiful flower produced by crossing Lawrenceanum var. Hyeanum with Maudiæ.

CYPRIPEDIUMS FOR AMATEURS.

HAPPILY, the notion that all Orchids require high temperatures and stuffy houses is but little believed in to-day, yet there are some amateurs who still think that no one can keep Cypripediums alive unless extraordinary conditions of the atmosphere are maintained. With regard to these plants there are few others that respond so readily to the conditions of an amateur's greenhouse, providing, of course, that it is suitably warmed in winter and kept shaded during sunny weather. Cypripediums are shade-loving plants, and it is hopeless to expect them to succeed along with such plants as tomatoes, for the latter only do well when the atmosphere is dry and airy. A few weeks under such unfavourable conditions would very soon bring about disastrous results.

Although the majority of the Slipper flowers, as they are sometimes called, will withstand a high temperature, and frequently make more rapid growth in it, there are many that succeed admirably in a cool-house. Here it is advisable to state that the term cool implies a house in which the winter temperature does not fall below 45 degrees. A rise of from five to ten degrees by day when the weather conditions are favourable will be all the better for the plants. Occasions may arise when severe winterly weather will cause the temperature inside the house to fall as low as 40 degrees, and this will probably not result in any harm, so long as it does not remain so for any prolonged period. An unreasonably low temperature is by no means conducive to the plants' welfare, and very little, if any, growth will take place under such extreme conditions. One must not forget that these remarks apply only to the cool-growing section ; some Cypripediums could not withstand anything less than 55 degrees. Every amateur possessing a greenhouse can cultivate successfully a wide range of Cypripediums. Even when the necessary temperature in winter is maintained by means of an oil-stove good results can be obtained.

It is frequently a difficult matter to ripen up the bulbs of Cattleyas in districts where foggy weather prevails during the autumn months. On this account Cypripediums are largely grown in and around Manchester and other big cities, for no sunny treatment in the autumn is required to be carried out by the cultivator. So long as the simple conditions of moisture and shade are looked after, a satisfactory production of flowers is bound to follow.

As regards their habit of growth, Cypripediums belong to the terrestrial section, and on that account require to be potted in almost similar style to the majority of other greenhouse plants. The writer can recall a house full of Cyp. insigne that were potted in loamy soil dug up from the adjoining garden. The results were as good as one would expect under

such conditions of treatment, and they proved the simple methods that can be adopted if necessity calls for them. But most amateurs wlll readily admit that Cypripediums are well worthy of receiving the best treatment that their owner can afford, and as the most suitable compost can be prepared at a cost that works out at a few pence per dozen plants, nobody will hesitate to supply the necessary material.

Fibrous loam is the chief material for all the cool-growing section. Turves that have been cut and stacked for a year are excellent, and the more fibre they contain so much the better, for it is the fibrous nature of the compost that prevents sourness occurring. If necessary, additional fibre in the way of osmunda or peat can be added, in fact, some cultivators always use a mixture of loam and fibre. A sprinkling of coarse sand, or even the grit obtained from broken pots, assists in maintaining the requisite porosity of the mixture, while the addition of sphagnum moss helps to maintain a moist condition. Sometimes a few clean leaves can be included with advantage, but never a large quantity, for as they decay rapidly the main portion of the mixture will become loose before the re-potting season again arrives.

The days of imported plants are long since past, hence only established plants need our consideration. A plant may require re-potting for either, or both, of two reasons. It may have out-grown the size of pot in use, in such case it must be divided, or else placed in a larger pot; secondly, after about twelve months the compost becomes exhausted and requires renewing, either by the addition of extra material or by an entire shake-out and subsequent replacement with fresh compost.

If the plant has been carefully treated since the last re-potting, much of the compost will generally be found in good condition, and in that case all that is necessary to be done is to pick out whatever portion is decayed and carefully work in fresh material. This can generally be accomplished without in any way altering the formation of the root system. After thus filling in the cavities, the mass of roots and compost should be placed in a larger pot, assuming that more rooting space is required, and the whole made firm hy the addition of sufficient compost to fill the same nearly up to the rim. This will allow a little space for applying water. The compost must be made firm, using a potting stick for the purpose. If the pot drops off when the plant is held up by the foliage it is a sure sign that the compost has been packed in much too loosely.

How often must water be applied? This is a question to which no definite answer can be given. Much depends on the season of the year. Twice a week may be ample in winter, while in the height of summer every day may not prove too often. Vigorous specimens may require more than others. It will probably be found that plants near the

heating apparatus or the hot-water pipes will require more frequent waterings than those situated farther away. Much will depend on the atmospheric moisture of the house. Where there is plenty of moisture-holding material, such as broken coke beneath the staging, much less damping down will be required than in houses without such provision. Houses of the conservatory type, in which the floor is composed of hard glazed tiles, generally require more frequent damping, and they are, as a rule, rather unfavourable structures for Orchid culture. However, much of their unsatisfactory nature may be overcome by a little judicious alteration.

CYPRIPEDIUM INSIGNE, A WELL-GROWN PLANT.

Cypripediums are at all times moisture-loving subjects, and on that account the atmosphere should be maintained in a moist condition. No drying-off period must on any account be practised or results will be fatal. On all fine mornings the foliage should be lightly sprayed with rain-water, carrying out this operation again in the afternoon during long days and bright weather. So long as a suitably moist atmosphere is maintained little trouble will be experienced through attacks of thrip. The presence of this insect pest is most easily discerned by the leaves assuming a rusty appearance. Careful washing, and an occasional after spraying, with a safe insecticide is usually a reliable remedy. Remember, prevention is better than cure.

Although some growers still advocate manurial aid in the case of pot-bound plants, this practice often brings about an unhealthy condition of the compost, with a subsequent ill-effect on the plant. By far the better way is to leave stimulants alone, and to replenish the plant's stock of food by a fresh supply of nutritive compost.

No Cypripedium has enjoyed greater popularity in the past than C. insigne. Even to-day it is well represented in collections by the yellow variety known as Sanderæ, and by the giant-like form distinguished as "Harefield Hall." Hybrids of it are multitudinous, and among its descendants are many of the finest of present-day favourites. In addition to this plant, there are two other species that also come from cool districts, namely venustum and villosum. With the enormous number of hybrids that have been raised, the selecting of suitable ones for cool treatment is a matter that requires careful attention. An examination of the parentage will generally indicate those that have been produced from cool-growing species. Some Cypripediums have long pedigrees and are made-up of varying proportions of cool and warm-growing species, and from these it is advisable to select only those in which cool-growing kinds appear to predominate. Later on we hope to give particulars of some of the warm-growing species and their hybrids.

POTTING SHED A NECESSITY.—Every Orchid establishment of any pretensions should have a light and commodious potting shed. This should be so constructed that it can be kept warm in winter, and so situated as to be easily got at from all the houses. The practice of potting in the houses in which the plants are growing is, besides being slovenly, most unfair to the operators, for men cannot work with comfort and dispatch under those conditions. Watering can be got over before the sun gets very high. When plants are in the potting shed being repotted, tying them up and cleaning them will also be performed, so that the routine work of damping, syringing, and ventilating should be the most that is required to be done actually in the houses during the hot weather. The potting shed should not be a place for storing away all the old lumber that will accumulate, but a workshop in which tidiness and order should prevail. One should make it a rule never to store away dirty pots, so that clean pots may always be at hand when wanted, packed away in their respective sizes. This may seem a small matter, but where there are many thousands of plants to pot, it is only by method that the work can be got through smoothly. It is a sad spectacle to see a man grubbing about in a heap of dirty pots and pans of all sizes for the size wanted, which, when found, must be washed before work can proceed.—*J. M. Black, May*, 1906.

AN ORCHID EXPEDITION TO CENTRAL AND SOUTH AMERICA.

(*Continued from p.* 143.)

BEFORE leaving Giradot, we bought medical supplies, etc. We went from here to Flanders, and there caught a train to Ibague, the capital of the Departmento de Tolima. It was here we decided to elect the Ecuadorean treasurer and general manager of the expedition. After locating the agent who furnishes mules for such trips, we were informed that it would take nine mules and four horses to carry ourselves and freight, which included our trunks, two cases of Orchids, herbarium press, etc. We could hardly see how it would take nine mules to carry our freight, but we were informed that it was best to have extra mules in case of accident. That afternoon the men were busy equalizing the loads of the mules which necessitated unpacking one extra-large trunk and placing the contents in separate boxes. To make the packs waterproof, everything had to be wrapped in American tar-paper and roped on the outside, We left Ibague at daybreak. My Spanish friend and myself were not expert horsemen. However, the Ecuadorean, who was brought up in the mountains of Ecuador, was qualified for the trip, and the Virginian had previously belonged to the United States cavalry, so he was likewise an experienced horseman. We had three expert guides, each carrying his famous machete about two feet long. Their travelling equipment consisted of an old pair of pants, a shirt, and a 'roana,' the native cape; also the 'alpargata,' or native shoes, made of hennequin fibre. It is interesting to see the many uses of the 'roana,' one of which is to place it over the head of the mules before loading. Without this it is impossible to load them. This performance is carried on periodically throughont the journey, inasmuch as the various trunks, etc., are always slipping from the mules' backs and coming in contact with abutting rocks along the trial.

"Our first object after leaving Ibague was Caja-Marca, where we arrived at dusk and managed to secure a shelter for the night. The tired guides had to unpack the mules in darkness. Our valises, containing necessaries for the night, had to be divested of their tar-paper coverings. This performance was the regular thing every evening. I was interested to find various plants of the 'Tulipan' at the houses where we stayed. Upon asking the woman where she collected them she replied, 'Arribe' (up there).

"The next morning we were up again before daylight, our guides informing us that to-day's trip was the most dangerous of the four days, inasmuch as we would have to climb to an altitude of 10,000 or 11,000 feet by the Quindeo Pass. We were advised to ride mules for the day, as they were very much surer-footed, this being essential in view of the narrowness

of most of the trails. We rode mules for the first three hours and then changed to our horses, deciding that we would sooner take the chance than go further on mule-back. Our meals during the day consisted of the characteristic native soup, home-made bread made from corn, and, of course, the native meat.

"The second day we were to make the town of Armenia, which was a hard day's ride, before dark. We eventually climbed to and were safely crossing the Quindeo Pass. The scenery throughout the day was indescribably beautiful. Crossing the Pass I noticed a large red fruit that looked like a strawberry. Stopping my mule, after a short climb, I found it to be a raspberry larger than the largest strawberry I had ever seen. My friends, who had not been so much interested in my Orchid material, became alert at sight of this edible fruit. I found three ripe fruits and exclaimed, 'This is the best find I have had yet; I will take the fruit home and try to introduce this large-fruited variety.' My friends replied: 'That sounds very nice, but we have allowed you to stop frequently for your blamed Orchids, and now that you have found something decent to eat you even want to take that away.' Three against one was too much for me, so the large-fruited raspberries were lost to science. I afterwards found that the natives called these 'moras.'

"After finishing our costly (to me) desert we started to descend to Armenia, which we could see in the distance, but, alas, a few hours' hard ride away. The progress seemed somewhat slow, so we spurred our horses ahead, otherwise we would have to stay in the mountains for the night. Just before dusk, with the town in the distance, our leader said we would have to speed on in order to make the town. My horse evidently had usually led the pack-trains because he made speed only when in the lead, so we were placed at the head. We started down grade on a half-way decent road at full speed. The Virginian, who was bringing up the rear, and who carried a revolver, decided to pull off a little Wild West show by the aid of his gun. The horses, evidently not used to such demonstrations, became somewhat frightened and increased their speed. This would have been to our liking had not my horse suddenly collapsed after one of these spurts. The only things I remember were flying hoofs and having the presence of mind to turn out of the way of the mule which was following. Before my friends could dismount I was up to and helping the horse. The Ecuadorean came up as white as a sheet and started feeling my legs and arms to see if any bones were broken. My friends said that my horse turned two somersaults and I turned three. It was evidently a lucky escape for me. If any bones had been broken it would have meant waiting for expert treatment until we reached the far-off town of Panama. However, I received nothing worse than abrasions. The horse could not be ridden the second day.

" We evenually arrived at Armenia without any further mishaps. After a hard day's ride over trails averaging four to six feet in width, with a drop of 7,000 feet on the side, we were ready for a good night's sleep. We put up at a very comfortable hotel, which fortunately possessed a shower bath, and retired early for a much-needed rest. However, immediately across the street, a recently imported piano player and billiard table formed a great attraction for the populace. At two o'clock in the morning the four of us yelled across and threatened to shoot the place if they didn't stop the noise. This had its effect, and the piano player ceased, but the clicking of the billiard balls could still be plainly heard at daybreak. We had very little rest that night.

" We again set forth in the morning. Inasmuch as my horse was lame, I

ARRIVAL OF ORCHIDS AT NORMAN BLACK COFFEE WAREHOUSE AT GIRARDOT.

mounted a mule for the day. Our objective for that night was La Maria. The scenery throughout the day was extremely interesting, and I saw many Orchids, both epiphytic and terrestrial. At noon we were approaching the River Vieja when our guides informed us that we would have to ferry across. The ferry turned out to be two hand-made canoes, about seventy-five feet long by three feet wide, tied abreast. These were attached by a ring to a cable stretched across the stream. As the canoes were poled along the ring slipped along the cable, thus keeping the ferry in a straight course. The river was about 150 feet wide and some 30 feet deep. It took about an hour and a half for the entire pack-train to cross, since all freight had to be unloaded from the mules and taken across separately, with the exception of the mule carrying mail, whose pack was left on his back.

Most of the time was taken up in trying to force the mules to enter the canoes.

"After all were across and the mules repacked, we immediately started an ascent of several hundred feet, almost at a perpendicular. We passed some very interesting vegetation, especially Lantana camara, a variety of which is used extensively in our summer bedding. I also saw various species of begonias and araceous plants, such as anthuriums, etc. Of particular interest was an entire hillside of tree ferns, which were very tempting. However, the cost of transportation was prohibitive. We finally arrived at La Maria at dusk. La Maria consists of one house with no comfortable rooms such as we had had the previous night at Armenia. However, it was quiet, and we spent the night sleeping on the bare ground, well supplied with mosquitos and ants. The Spaniard and myself shared the same straw mat, and during the night were both awakened by the approach of an animal, which we concluded was a puma or wild cat. As I held the flashlight the Spaniard prepared to shoot, when we suddenly discovered it was the landlord's dog returning from the hunt. Again I was awakened by my partner yelling "My neck, my neck." With the aid of my flashlight I found a big stag beetle tightly fastened to his neck. After removing this we rested uninterruptedly until daybreak.

"We started on the fourth day's journey with *Zarzal* as our objective. During this day I was able to collect several epiphytic Orchids, which were brought back to the Garden. We reached *Zarzal* at noon, and from here secured automobiles, which brought us to Tulua at four o'clock. We put up here for the night, and tried to locate bath or shower, but without success, the result being that we all went to the river for a swim. The next morning we left on the "Ferrocarril del Pacifico," or Pacific railroad. for Cali. Here we found a very good hotel, in fact the only hotel during my three months in Colombia that had running water in the bedrooms. We were advised not to leave Cali for the seaport of Buenaventura until our reservations for sailing were assured, because of the lack of good hotels in Buenaventura. So the Virginian and I, after two days in Cali, said good-bye to our friends and left by train over the mountains to Buenaventura. The scenery across the Western Andes is very picturesque. In spite of the fact that the journey is an all-day trip and very tiresome, it is extremely interesting for the botanist, observing the vegetation, varying according to the altitude. On nearing the Pacific coast one is particularly struck with the wonderful varieties of Anthuriums, Philodendrons, and ferns. We reached Buenaventura at five o'clock in the evening, where hundreds of natives literally fought for our grips. After putting up at the one and only hotel, I was convinced that we had been wise to stay at Cali as long as we had. The majority of the population in this coastal town is black. The

houses are mostly of the native type with thatched roofs, and most unsightly. Along the seacoast one sees rows of these huts, built above the water upon stilts. However, of recent date, a large concrete American-built dock has been completed with railroad connections. This has greatly

UNPACKING BOXES UPON THEIR ARRIVAL AT THE GARDEN.

PACKING BOXES UPON THEIR ARRIVAL AT THE GARDEN.

increased the handling of freight to towns of the interior. Before the building of these docks the steamers would anchor in the bay, and all freight and passengers were transferred on barges. One can still see the barges tied up in the bay. We sailed the next day, Monday, on the Panama-

Pacific freighter 'General O. H. Ernst,' for Panama, and arrived at Balboa early Wednesday morning.

"My first act was to locate Mr. C. W. Powell, whom I had previously cabled of my arrival. After leaving my baggage and plants in his care, I again boarded the steamer and took the trip through the Panama Canal. On arrival at Cristobal, I immediately interviewed the Manager of the United Fruit Company's Freight Office, and, after presenting my Government permit and explaining the object of my expedition, secured his promise that the incoming Colombian Orchid shipment would have his personal supervision and be transferred to the first boat for New Orleans. The next morning I took the train back to Balboa, and was the guest of Mr. Powell for a week, during which time I went through his collection of Orchids thoroughly. On leaving, upwards of 200 plants were given me for the Garden, many of which are new to science and brought to the United States for the first time. In exchange I presented Mr. Powell with one case of my Colombian Orchids, which I had brought with me.

"My next objective was the West Indies, and I arrived at Kingston, Jamaica, after a two days' trip. A week was spent in Kingston, the principal place of interest being the Hope Botanic Gardens. Through the courtesy of the Director I secured a shipment of large tree ferns, so necessary for our tropical fern house. These were obtained in the region of the Castleton Gardens, about fifteen miles from the Botanic Gardens. Various Orchids and economic plants were also given me in exchange for a case of Colombian Orchids, which I had brought with me. I finally sailed for New York, bringing with me two crates of plants aggregating 900 pounds. Before leaving, I cabled Dr. Moore to arrange with Washington to permit entry of these through the port of New York, since my permit called for entry at New Orleans only. On arriving at New York I was met by a special Government representative. After various preliminaries I finally placed my shipment in the hands of the American Express Company, thus terminating my responsibility for the expedition.

"My first communication with the Director notified me that the first Colombian shipment had arrived in New Orleans. I immediately started for St. Louis by automobile, and upon arrival found the Orchids in every nook and corner of the houses, demanding immediate attention. Within the first month we had arranged in permanent baskets over 3,000 plants. Prompt action was necessary, as the plants had come through in excellent condition and had started new growths, which, when developed, produce the large mauve flowers. The sooner the plants could be permanently established in their baskets the more rapidly would the growths develop, with more chance of producing flowers at the scheduled time. The plants will undoubtedly produce their best display next year.

"The latter part of September, twelve cases of Cattleya Schrœderæ were received at the Garden. These were contracted for before I left Bogota, and were forwarded by Mr. Norman Black. This is but half of the plants ordered of this variety, and it remains to be seen whether any more will be shipped. Considering the length of time on the way the plants arrived in excellent condition."

THE ORCHID COLLECTION OF MR. C. W. POWELL.

ON his return journey from the recent Orchid collecting trip to South America, Mr. George H. Pring stopped at the famous garden of Mr. Powell in Balboa, Canal Zone, Panama. The native Orchids concentrated in this notable garden embrace the major portion of the Panamanian species known to science. The collection has been brought together within the last ten years by Mr. Powell, chiefly from the Chiriqui region. Mr. Powell's enthusiasm for these plants, has caused him to be locally termed "the Orchid Man," and his garden is one of the show places in Balboa to both botanist and tourist.

Mr. Pring states that "the collection aggregates upwards of five thousand specimens which are concentrated in the garden on the east side of the residence. The garden is surrounded by an eight-foot chicken-wire fence, covered with various species of climbers to shade the plants from the sun. This same vine-covered wire meets overhead, giving shade and likewise supporting the suspended Orchids. The density of the shade is governed, according to the requirements of the season, by pruning. At the western end of the garden most of the shade is provided by a large mango tree, upon trunk and extended branches of which various shade-loving epiphytic plants are tenaciously rooted. Towards the eastern portion of the garden full sunshine is permitted for the benefit of sun-loving terrestrial Orchids. Of interest here was a large bed of the Dove Orchid, Peristeria elata, producing upwards of fifty flower spikes, averaging four feet high and well filled with maturing buds. The soil consists of a heavy sandy loam, and Mr. Powell informed me that the plants grow under like conditions in the wild state, except that in the wild state they grow in association with grasses. Sobralias were also planted in similiar beds, two noteworthy specimens being the new species S. Rolfeana and S. Powellii, in full bloom. Other terrestrial Orchids growing in shade were various species of Habenaria, including several undetermined species. Associated with these shade-loving terrestrials were some recently collected plants of the Mandarin Orchid, Phragmopedilum caudatum var. Warscewiczii.

"The greater part of the collection is represented by epiphytes, the genus Epidendrum dominating all others by its many species. The beautiful E.

atropurpureum var. rhodoglossum and E. prismatocarpum were in full bloom, as was also the new species of the Bucket Orchid, Coryanthes Powellii and C. Hunteriana. Mr. Powell remarked that it is almost impossible to get the natives to climb the trees to collect bucket Orchids, as the large masses of roots are invariably infested with numbers of stinging ants. Removing a clump of these plants may be compared with disturbing a hornet's nest, but, according to Mr. Powell, who had experienced both adventures, the hornets are easier to combat than the thousands of small stinging ants.

"Some of the more showy Orchids were Trichopilia suavis and T. marginata growing upon large blocks of wood. Of recent discovery was the albino form of both species, T. marginata alba being the most striking. The Oncidiums in flower included the showy O. ampliatum, several plants of which where also observed in the central parkway in Panama City, attached to trees. There were also several long spikes of O. panamense which somewhat resemble O. altissimum. Various species of Pleurothallis, Stelis, Scaphyglottis, and Masdevallias were in bloom, the rare white-flowered M. Livingstoneana being particularly noticeable.

"On account of the atmospheric conditions the growing of Orchids in Panama is considerably simplified. During the week, as Mr. Powell's guest, he and I discussed the cultivation of Orchids from all angles. In basketing, he has adopted the same system as practised at the Garden, of using only baskets or blocks of wood for all epiphytic Orchids. His baskets, however, are much shallower than those used at the Garden and narrowed to the base, whereas those at the Garden are perfectly square. The Garden method enables the grower to fasten the Orchid more securely without wrapping or tying it in with wire. After demonstrating our method of packing the peat and moss in such a way as to tightly fasten the plant, Mr. Powell decided to adopt it instead of his method of potting, as with ordinary garden plants in soil. The growing medium used is the native sphagnum moss mixed with osmunda fibre imported from the United States, the greater part being the sphagnum.

"As the rainy season was at its height during this period, artificial watering was unnecessary, but during the dry season the hose is in constant use. The atmosphere during the week of my visit was at saturation point, and even wearing apparel hanging in the house would mildew. To overcome this, all clothes wardrobes are connected with electric lights, which are kept burning during the wet season. During the day there is an abundance of sunshine, sufficient to overcome the damping off of young plants. Both Mr. Powell and Mr. Cyril Allen of Colombia, the latter having had experience in Europe in growing Orchids, suggested that more direct sunshine should be given Orchids than ordinarily practised in the United States and Europe. I accepted the suggestion for Europe, but in St. Louis

the heat of the direct sun in the summer immediately burns the leaves and pseudo-bulbs. The amount of sunshine and dry atmosphere in St. Louis is evidenced by the fact that such Orchids as Schomburgkia, Chysis and Lælia Boothiana flower annually. My own observations in Colombia, especially with regard to Cattleyas, proved that in their natural habitat these Orchids withstand considerable sunshine. The plants growing in the most shady places, as upon branches of trees, produce long, narrow pseudo-bulbs, whereas those attached to the trunk and fully exposed to the sun, produce short thick growths with the maximum amount of flowers to the spike.

"In examining Mr. Powell's herbarium specimens I was particularly interested in the retention of the natural colour of foliage and flowers. In this moisture-laden climate it is almost impossible to dry specimens by the ordinary method without applying artificial heat, and an electric iron is generally used to force drying. The fresh specimen is placed between blotting-paper and the heated iron applied until the specimen is pressed and dried. At frequent intervals the specimen is tested by touching the leaves or flowers, the operation being considered complete when they will not adhere to the finger. Frequently an hour or so is taken for an individual specimen."

An account of D. Schlechter's elaboration of Mr. Powell's discoveries was given in our issue for April, 1923, p. 107.

RODRIGUEZIA SECUNDA.—Comparatively few Orchids have been longer known in British gardens or were more generally cultivated during the second quarter of the present century than this species, but like others that were popular during that period, it has receded before the more showy kinds since imported from the same region over which it is spread, although it is still met with in many collections. It was originally introduced from Trinidad about the year 1818, but it had been discovered many years previously by Humboldt and Bonpland, in the neighbourhood of Carthagena in northern Colombia, growing on the trunks of Crescentia Cujete (The Calabash Tree). It was afterwards brought from Demerara by Capt. Bispham, of the Liverpool merchant service, and cultivated in that city. The brothers Schomburgk during their exploration of British Guiana, 1840-44, found it generally dispersed over the whole country; they also noted a variety with darker flowers on the banks of the Demerara river and which they called sanguinea. It is also very common around Para in Brazil, the Mango trees being full of it, and it is almost the only Orchid found within the city itself. The geographical range of Rodriguezia secunda is thence a very extensive one. It is variable in habit and colour, the latter ranging from sanguinous-red to pale rose.—*Veitch's Manual of Orchidaceous Plants.*

THE HISTORY OF ORCHID CULTURE IN THE UNITED STATES OF AMERICA.

CONSIDERING the present popularity of Orchid cultivation in the United States of America, a few notes on the early history are not without interest, and we are pleased to record our indebtedness to Mr. William N. Craig, who contributed much information thereon, in an article published in the *Gardeners' Chronicle*, of America, April, 1924.

In 1838, James Boot of London, sent some Orchids to his brother, John Wright Boot, who had a small greenhouse in Bowdoin Square, Boston, Mass., and who became an enthusiastic cultivator, importing various species from the celebrated Loddiges' collection at Hackney. Mr. Boot died in 1842, and his plants passed into the possession of Mr. John A. Lowell, the earliest exhibitor of Orchids before the Massachusetts Horticultural Society. In 1856, the collection of Mr. Edward S. Rand was probably the most important of its kind in the United States, a specimen of Dendrobium calceolus measured three feet across and four feet high, while a plant of Lælia crispa was described as being "as large as a washtub." Some of the plants were obtained from Messrs. Hugh Low & Co., Clapton, England.

In 1873, the first Orchids were grown by Mr. Ed. S. Rand, Jnr., at Glen Ridge, near Boston, and Mr. Wm. Craig states that this was the choicest collection of its kind in New England at that early day. About this time noteworthy Orchids were grown at the Pratt estate in Watertown, by Gardiner G. Hubbard, of Cambridge, and also by William Gray, Jnr., of Boston, who was interested in Cypripediums. The well-known collection of Mr. Fred. L. Ames, at North Easton, and the commercial one of Hovey & Co., Cambridge, must also be recorded.

Thomas Hogg began Orchid cultivation in the vicinity of New York about the year 1850. He had a good collection. Some years earlier a few plants had been grown, but there were no collections. In 1840, Isaac Buchanan took over the first Cattleya Mossiæ from London, and subsequently imported a collection from Brazil, part of which was sent to Hugh Low & Co. On the dispersal of the Hogg collection some of the plants were purchased by Mr. Knight, of New York, who was the first to flower Dendrobium Devonianum in the United States. In 1856, Buchanan made a visit to Europe and procured a fine assortment of the best kinds then in commerce. It is said that in the early days of Orchid culture in America more plants were distributed from this collection than from any other.

The Van Vorst collection was in 1875 described as the finest in America, the plants being under the care of John Fleming, who produced many wonderful specimens. We read that the whole of one side of a house was

a mass of Cattleya Mossiæ, while another contained Calanthe vestita in profusion. In 1870, this noted collection was purchased by M. Lienau, then of Jersey City, who was one of the first to send Orchids to Europe. On a trip to South America, Lienau saw the collection of Mr. Perrin, from whom he purchased Lælia Perrinii. The remaining part of the Lienau collection was sold in 1873, many of the splendidly established plants having been collected by Rœzl.

Mr. Wm. Craig remarks that no record of the pioneer day of Orchid culture in the United States would be complete without mention of the celebrated collection of General John F. Rathbone, of Albany. It started with the importation of a plant of Vanda cœrulea from England in 1860. This so charmed the General that he formed a collection after building a special house for the plants. In 1867, he flowered Dendrobium nobile with 475 flowers, Phalænopsis amabilis with 85 flowers, P. Schilleriana with 156 flowers, Angræcum eburneum with 30 flowers, and Odontoglossum grande with 48.

In later years there were the noted collections of Mr. Erastus Corning, of Albany, and of Mr. Wm. Matthews, of Utica. In the Philadelphia section Robert Buist was one of the pioneer florists of that city, where also Caleb Cope had a small collection in 1850.

THE AMERICAN ORCHID SOCIETY.—The objects of the American Orchid Society are set forth as follows:—"We, horticulturists, scientists, and lovers of flowering plants, and particularly those of the Orchid family, the largest and most beautiful, but least known of its kingdom, believing that more active measures should be taken by those interested to advance the culture of Orchids in America, and to secure for them the appreciation to which they are entitled, do hereby associate ourselves together under the name of The American Orchid Society for the purpose of aiding in every possible way the importation and improvement by cultivation and hybridisation of exotic Orchids; the dissemination by exhibitions, lectures, and publications of useful information concerning Orchids, and the extension of knowledge, production, use and love of these beautiful flowers."

ROLLER BLINDS.—Attention is often required when using roller blinds, either of canvas or laths, as not infrequently they get slightly out of place and then allow the sun to shine through unprotected areas of the glass. Although the whole house may be shaded so as the correct temperature is maintained, any irregularity or broken condition of the blinds may be just sufficient to allow a single plant to come in contact with the fierce rays of the sun and suffer considerable damage. In windy weather it is a good plan to secure the ends of the blinds with cord.

POPULARIZING THE ORCHID.

AS an ardent amateur I often wonder why the Orchid does not become more popular with those who have only small greenhouses and are passionately fond of growing flowers. Surely there cannot be any negative answer why it does not. At small expense collections may be purchased which will give a return by wealth of bloom lasting several months in beauty, repaying those who care for the plants to the full. All reputed firms dealing in Orchids are only too ready to give expert advice or cultural instructions to those in doubt. They welcome correspondence from all growers of Orchids. The would-be grower of these plants is, I am afraid, frightened by the fallacy "that they are only flowers for the millionaire." This, the trade, and, in fact, all amateur growers, must explode. Why should there not be a few Orchids in the greenhouse of the artizan? Why should he not enjoy these beautiful flowers? They would add to his pleasure and also to that of his friends who inspect his plants.

A few weeks ago a large London store made a special show for four days of Orchids in their Floral Hall, and, in addition, advocated the purchase of cool house and warm house plants, stating they could be successfully grown in any greenhouse, and made reference to the heating and shading. This gives a suggestion to the trade in the provinces to arrange for a full display at florists' shops in close proximity to their nurseries. The interest that would be displayed and the advertisement that would accrue therefrom is obvious, and would do much to popularize this type of plant about which the public know so little. There are many ways in which the display could be advertised, and purchasers of even a single plant put in touch with the Trade House.

The beginner and the small grower require encouragement from the Trade, and as their interest deepens and they gain confidence there is naturally a desire to increase their collections. The aphorism, "Mighty oaks from tiny acorns spring," is as true about growing Orchids as in any walk of life. It is refreshing to note that the Orchid growers of Great Britain have presented a cup to the Boston Show, and it might be reasonably expected that a similar progressive step, either in the form of a piece of plate or a cup would, if awarded at some of the shows in this country, specifying if possible that it be awarded to those growers who do not employ professional help, be a great incentive to the small amateur gardener to take up the interesting hobby of growing Orchids and enjoy the pleasures connected therewith.—*A. C. Lister, Thorpe Lodge, Malton Road, York.*

ROYAL HORTICULTURAL SOCIETY.—Meetings will be held on Wednesday, June 11th, and Tuesday, June 24th, 1924.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassolæliocattleya The Globe ...	Bc. Cliftonii × C. Trianæ	Armstrong & Brown.
Cattleya White Queen	Trianæ × Irene	„ „
Læliocattleya Eximoglossa	eximia × callistoglossa	C. J. Lucas.
Odontioda Alethea	Oda. Diana × Odm. Broteham	Charlesworth.
Odontioda Barbara	Odm. Aireworth × Oda. Meteor	„
Odontioda Crescia	Odm. Dora × Oda. Meteor	„
Odontioda Dolosa	Oda. Brewii × Odm. Harryanum	„
Odontioda Elina	Oda. Elsie × Odm. Pharos	„
Odontioda Ella	Oda. Charlesworthii × Odm. Dusky Monarch	„
Odontioda Elma	Odm. Solon × Oda. Orion	„
Odontioda Freda	Oda. Bradshawiæ × Odm. Pharos... ...	„
Odontioda Grace	Oda. Wilsonii × Odm. amabile	„
Odontioda Irma	Odm. Louise × Oda. Madeline	„
Odontioda Kathleen	Oda. Moyra × Odm. percultum	„
Odontioda Mavis	Oda. Red Cross × Odm. Dusky Monarch...	„
Odontioda Mona	Oda. Joan × Oda. Aphrodite	„
Odontioda Olive	Oda. Chanticleer × Odm. Aquitania ...	„
Odontioda Pamela	Odm. Harryanum × Oda. Madeline ...	„
Odontioda Pekoe	Oda. Coronation × Odm. splendidum ...	J. J. Joicey.
Odontioda Ursula	Oda. Hermione × Odm. Felicity	Charlesworth.
Odontioda Warden	Oda. Madeline × Odm. Phillipsianum ...	C. Cookson.
Odontoglossum Alvara	Ithone × Clovis	Charlesworth.
Odontoglossum Asmode	Queen Mary × eximium	„
Odontoglossum Avoca	eximium × King Manoel	„
Odontoglossum Clydonia	Fabia × St. James	„
Odontoglossum Dalmatica	Aireworth × St. James	„
Odontoglossum Elisium	Solon × St. James	„
Odontoglossum Isolene	Georgius Rex × Tityus	„
Odontoglossum Lucretia	amabile × St. James...	„
Odontoglossum Marcella	ardentissimum × The Czar...	„
Odontoglossum Mrs. John Owen ...	Empress of India × ardentissimum ...	John Owen.
Odontoglossum Muralis	Penelope × Clovis	Charlesworth
Odontoglossum Norvic	Clovis × Aquitania	„
Odontoglossum Omega	Aglaon × St. James	„
Odontoglossum Ornatus	eximium × Georgius Rex	„
Odontoglossum Orobus	Georgius Rex × The Czar	„
Odontoglossum Ovidius	Felicity × St. James	„
Odontoglossum Selma	Jasper × percultum	„
Odontoglossum Thecla	Aglaon × Penelope	„
Odontoglossum Torenia	Lambeauianum × Aquitania	„

COOL HOUSE.—When furnished, the Cool house will be a thing of joy and beauty, full of interest even at times when the bloom is comparatively scarce. Do not expect your plants to do too much, either by flowering them too often, or making them carry their flowers too long, as many, especially among the Oncidiums, will flower themselves to death. Have duplicate plants, and flower them in alternate years. Another excellent plan is to cut the spike as soon as developed, and place it in a tube of water next to the plant, as it will last nearly as long as it would if not cut, and at the same time greatly relieve the plants. Orchids are fastidious. Often when they refuse to grow in one part of the house, they will, for some reason or other, grow well in some other part of the same structure. This must be observed, and when a plant is not at home in one place try it in another, and when you have found the place that suits it, keep it there. The chief elements of success in Orchid growing lie under these heads :—The proper temperature according to season ; proper watering ; and perfect cleanliness, including pure air.—*J. Mackay, April*, 1903.

CALYPSO BULBOSA.

AN interesting account of Calypso bulbosa, also known as C. borealis, is given by Mr. Henry Mousley in the *Journal* of the New York Botanical Garden, February, 1924. In the Rockies, this species is said to grow at heights of 4,000 to 5,000 feet above sea-level, and there a form has been described as having a beard of white, instead of yellow, hairs, at the point of the division of the labellum. At Hatley, in Quebec, Mr. Mousley found it in deep cedar woods, at an elevation of about 1,000 feet above sea-level, literally poised, for it hardly seems to grow in its mossy bed, so easily can it be lifted therefrom.

Mr. Mousley states that it was on May 15th, 1918, that he first discovered this little northern gem, which at that date was in the pink of perfection, only ten plants, however, being located. Since then he has counted as many as fifty plants in a season. Excellent photographic plates accompany the article, and from them a correct idea of the plant's habit of growth may be obtained.

"I share the feeling with many others," remarks Mr. Mousley, "that it was a poetic grief when the name of this lovely little Orchid was changed from Calypso borealis, 'Nymph of the North,' to Calypso bulbosa, a change apparently not in accordance with facts, since Calypso does not spring from a bulb, but from a tuber, and therefore 'Calypso tuberosa' would probably have been more to the point."

SCHOMBURGKIAS.—A genus of Orchids that does not find favour with amateurs generally is Schomburgkia, owing, no doubt, to the difficulty of getting the plants to bloom freely. But I consider it possible, with careful attention, by placing the plants in various positions and carefully noting where they do best, that the successful blooming of these distinct plants may be accomplished. Schomburgkia crispa is the only species that flowers here with anything like regularity. It is grown in the Cattleya house, standing down amongst the Cattleyas and receiving exactly the same treatment. Other species, as S. undulata and S. Lyonsii (which latter bloomed here for the first time last month, and another plant will soon be opening its pretty flowers), both do well treated exactly the same as the Mexican Lælias. S. tibicinis and S. Sanderiana, which have hollow or cow's-horn-like pseudo-bulbs, grow well hanging close to the roof glass in the same house. All of them, when growing freely, will take any quantity of water at the root, but when growth is completed they should recieve less moisture, and be placed where they will get the least amount of shade and plenty of fresh air, which will harden and mature their growths, and induce them to flower regularly.—*W. H. White, October*, 1893.

CULTURAL NOTES.

CŒLIA MACROSTACHYA.—As soon as the growths have made a good start is the season when potting or surface renewal should be done, using a compost of two parts good loam to one part each of peat and leaf soil. Give a fair drainage, and pot firmly. A position in the Cool intermediate house is very suitable. During active growth copious supplies of water should be given, and at no season should this species be allowed to remain in a dry condition. Perhaps this could scarcely be called a showy Orchid, yet when a good spcimen is seen carrying many spikes, two feet or more in height, of its pretty rose-red flowers, it has a beauty of its own, and is well worth its room.—*W. P. Bound, June,* 1907.

SOBRALIAS now take a more exalted position among Orchids, since the introduction of so many lovely species and varieties as leucoxantha, Lowii, Lucasiana, xantholeuca, and the white forms of macrantha. They flower at various times of the year, and consequently the bulk cannot be re-potted at the same time, and for this and other reasons each must be studied separately, and operated upon when in suitable condition, and this is generally a few weeks after the plant has flowered. The majority of these grow well in a warm Intermediate House, or the coolest part of the Cattleya House. They should have well-drained pots or pans, and over the drainage should be placed a good layer of rough moss, to prevent the fine particles of soil clogging it up. The soil used may consist of two parts lumpy peat, two parts turfy loam, with the addition of a little moss, and sufficient coarse sand or finely broken crocks to render the compost porous. For a few weeks after potting give little water, so as to allow the new roots to enter the fresh soil; afterwards, as growth proceeds, a good supply may be given. Spraying is also very beneficial and an aid in keeping them free from insect pests.—*J. Mackay, June,* 1903.

DENDROBIUMS will be in full growth now, and should be given all the sun heat possible without scalding the foliage. The young growths should be carefully staked or tied up before they get too long, as they easily bend over when moving the plants for re-staging or pot-washing, and if the growth gets bent a year's work is wasted. They must be carefully watched for red spider, and if it makes its appearance they should be fumigated without delay, as spider soon makes the young foliage unsightly and checks growth. If the house is kept well damped, and the syringe is freely used in bright weather, it seldom causes much trouble after the use of fire heat is avoided as much as possible. Plenty of ventilation should be given, but the conditions outside must be taken into consideration. No hard and fast rule can be laid down, as some days we get many samples of weather, whereas another day the ventilators can be opened in the morning and left till closing

time in the afternoon, so that the only way is to ventilate as much as outside conditions allow without causing a draught. If the houses are studied one can tell as soon as a house is entered whether the ventilation is right or wrong, and the plants will soon show which method is right. Hardly two houses behave alike in this respect, as the position of the house makes a lot of difference in the amount of sun heat which reaches it, and the wind also makes a great difference to houses adjoining but running perhaps different ways.—*W. H. Morgan, June,* 1908.

A GARDENER, who is justly proud of his small but wonderfully well-cultivated collection of Orchids, gave me the other day what he considered were the four chief factors in the successful culture of Orchids (warm and intermediate Orchids). They are these: Sun, air, warmth, and moisture. His Orchids are never shaded from the sun's rays. Air is supplied very freely on all favourable opportunities. By "warmth" he referred principally to sun heat, not fire heat, and by "moisture" he means that the plants should be kept wet not only at the roots, but occasionally syringed overhead daily during the growing season. No doubt whatever that his method of treatment suited his own plants, for they were with but few exceptions in exceptionally robust and rude health. His ideas are right; they cannot be questioned. But I may point out one fact of some little importance when one talks about treating his Orchids without exception to species, or genus, to the full glaring rays of a powerful summer's sun through the glass. It is this; on looking round I noticed that there were a good many tall trees in the immediate vicinity, and his Orchid houses stood well beneath their shadows, therefore it was not surprising that no shading was employed. None was necessary evidently, and if used under the circumstances would certainly do more harm than good. We all know, when a house is partially shaded by a neighbouring tree, how cool and delightfully refreshing the temperature therein seems on an oppressively hot summer's day. And that, if one half of the structure is so shaded, the other half may be fully exposed to the sun, but no burning or scorching of the foliage will accrue because the one condition connterbalances the other to a nicety; and this, together with the air and moisture distributed, ensures healthy and invigorating conditions as the natural result. However, I must still continue to advise the shading of Orchids by some material or other when in exposed positions; but I advise also that such shading should be removed as early in the afternoon as the circumstances may admit, so that the plants may enjoy the syringe, the sun, and the air at one and the same time, for longer or shorter periods during the afternoon or evening, before the top air is taken off for the night. From this system of treatment weakly plants will derive much benefit, whilst strong specimens will become stronger still.—*H. A. Burberry, June,* 1898.

ROYAL HORTICULTURAL SOCIETY.

April 29th, 1924.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Sir Frederick W. Moore, Sir John Rutherford, Messrs. Jas. O'Brien, R. Brooman White, H. T. Pitt, Henry H. Smith, H. G. Alexander, Fred. K. Sander, S. W. Flory, J. C. Cowan, T. Armstrong, E. R. Ashton, Chas. H. Curtis, Richard G. Thwaites, J. E. Shill, C. J. Lucas and J. Wilson Potter.

FIRST-CLASS CERTIFICATES.

Odontioda Ganesa, Gerrish's variety (Oda. Brewii × Odm. President Poincare), from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). A handsome flower of dark crimson colour and fine formation, the prominent crest on the labellum being yellow. The spike carried six flowers.

Cattleya Prince Shimadzu var. Titanic (Hardyana × Tityus), from Messrs. Flory & Black, Slough. One of the finest of Cattleyas, the sepals and very broadly developed petals being clear mauve colour, the expansive labellum has a deep crimson front and yellow disc.

AWARDS OF MERIT.

Odontioda Joiceyi var. John Cowan (Oda. Coronation × Odm. promerens), from J. J. Bolton, Esq., Claygate, Surrey (gr. Mr. J. Lyne). This plant carried a spike of eleven finely-formed flowers, of rich claret-crimson colour, with a white margined and white front to the lip, the base being blotched with crimson.

Miltonia Beau Brummell (Bleuana var. Queen Elizabeth × Venus), from H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood). Flowers resembling those of M. Bleuana, light rose in colour, the inner-halves of the segments violet-purple, the base of the lip has distinct red rays.

Odontoglossum Syrinx var. Helius (crispum xanthotes × waltonense) from Messrs. J. & A. McBean, Cooksbridge. Acknowledged to be the finest light-yellow hybrid Odontoglossum, the flowers being of excellent formation and of clear canary-yellow colour.

CULTURAL COMMENDATION.

To Mr. Lewis Smith, gardener to Captain Maldwin Drummond, Cadland Park, Southampton, for a grand plant of Maxillaria Harrisoniæ, bearing nine spikes with a total of 18 fleshy flowers. Captain Drummond also showed a fine specimen of Dendrobium nobile, Cadland Park variety, bearing 150 flowers of fine quality.

OTHER EXHIBITS.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), showed Brassolæliocattleya Caligula, Westonbirt variety (Lc.

callistoglossa × Bc. Cliftonii magnifica), one of the best of its kind, the sepals and the petals blush-pink, the rounded labellum Tyrian purple, with a rose margin. Læliocattleya Elinor, with orange-tinted flowers, and Cypripedium Holdenii, a fine flower.

GROUPS.

H. T. Pitt, Esq., Stamford Hill, staged an interesting group, containing the rare Aspasia lunata, Microstylis Scottii, with pretty foliage, and Odontoglossum crispum var. Lorraine, with purple-spotted flowers.

Messrs. J. & A. McBean were awarded a Gold Medal for a grand group, the middle of which was filled with hybrid Cymbidiums and distinct forms of C. insigne. The sides were composed of Oncidium Marshallianum, as well as with examples of O. McBeanianum. Among the many Odontoglossums were O. Indian Prince (Solon × St. James), a handsome flower of intense scarlet colour with pure white margins. Miltonias and Odontiodas were in prominent positions and came in for well-deserved admiration.

Messrs. Stuart Low & Co. secured a Silver-gilt Banksian Medal for a fine exhibit of species and hybrids. Among the remarkable species were Vanda Parishii, with pale yellow flowers spotted with red. Dendrobiums were in fine form, as also was Epidendrum Parkinsonianum, and the yellow Odontoglossum Lindenii. Brassocattleyas and Læliocattleyas were well represented and included several distinct varieties.

Messrs. Charlesworth & Co. exhibited Odontonia Olivia var. Fascinator, a pretty flower of yellow colour with orange-brown blotching, also Vuylstekeara Rutherfordii, of rich claret-purple, and handsome hybrid Odontoglossums.

Messrs. Sanders showed a selection of Cymbidiums, including the new C. Nellii var. Surprise, of clear canary-yellow colour; also Odontioda Grenadier var. Empire, one of the finest of its kind with rich, scarlet-crimson flowers, and Odontoglossum Gala, derived from nebulosum crossed with harvengtense.

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May 13th, 1924.

Members of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien, C. J. Lucas, H. T. Pitt, H. H. Smith, H. G. Alexander, A. Dye, F. K. Sander, John Cowan, E. R. Ashton, J. Wilson Potter, Chas. H. Curtis and John Cypher.

FIRST-CLASS CERTIFICATE.

Læliocattleya Imperatrix Regina (C. Mendelii × Lc. Martinettii), from Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander). A grand result, and also one of the finest examples of cultivation. The plant bore a spike of four large flowers, the broadly developed sepals and

petals blush-mauve, the showy labellum intense crimson-purple, lighter at the margin, and with a bright yellow disc and red lines at the base.

Cultural Commendation.

Odontioda Lambeauiana, Westonbirt variety (C. Nœzliana × O. Lambeauianum), from Lieut.-Col. Sir George Holford, K.C.V.O. This plant carried three branched spikes of brilliant dark scarlet flowers, the lip having a prominent yellow crest.

Other Exhibits.

Lieut.-Col. Sir George Holford, showed Læliocattleya Freda (C. Mossiæ × Lc. Germania), with large flowers of apricot-yellow colour, resembling in shape those of C. Mossiæ.

J. J. Bolton, Esq., Claygate (gr. Mr. S. Lyne), sent a finely grown example of Odontoglossum crispum var. Renown, the white flowers measuring over four inches across.

Groups.

Messrs. Stuart Low & Co., were awarded a Silver Banksian Medal for a well arranged group, at the back of which were the scarlet Epidendrum radicans mixed with Odontoglossums and Odontiodas. In the foreground were the attractive Cattleya Dusseldorfei Aquinii, with purple flushing on the tips of the petals, and a distinct form of Lycaste Skinneri named Tackii, which opens with a green shade, but changes to white. Dendrobiums and various Bulbophyllums were in fine form.

Messrs. Armstrong & Brown exhibited Odontoglossum Harmony (Dora × Mars), a fine novelty bearing a spike of thirteen large flowers of Tyrian-purple colour, shaded with crimson, and having slight whitish markings at the margin.

THE ORCHID CLUB.

THE Meeting of the Orchid Club held on April 11th, was noteworthy for the fine examples of Dendrobiums and Cymbidiums shown.

Dr. F. Craven Moore, staged a large group, the centre plant of which was the fine Brasso-Cattleya Cliftonii magnifica, supported by excellent examples of Lycaste Skinneri. In the background, several large spikes of Oncidium Marshallianum, and a batch of new Odontioda hybrids of a soft art shade of orange-red formed a beautiful contrast. The body of the group was completed with Dendrobiums in variety.

A. T. Cussons, Esq., Kersall (gr. Mr. F. Cookson), exhibited a large group of Cymbidium hybrids, several of which were fine examples of culture, conspicuous among them was the beautiful pink Alexanderi, Cusson's var., and some fine forms of Pauwelsii.

Sir. William Thom, Blackburn (gr. Mr. R. Williams), showed a group of Dendrobiums, notable for the excellent manner in which they were

flowered, and conspicuous among which were D. nobile var. King George, D. nobile High View var., D. Rubens grandiflorum, Ainsworthii giganteum, Cybele album and many others.

B. J. Beckton, Esq., Irlams-o'-th'-Height (gr. Mr. W. A. Stewart), exhibited a mixed group, including the fine Miltonia Bleuana Hessle var., Miltonia Bleuana rosea, bearing 30 of its large blush-white flowers, the sweet scented Cœlogyne ochracea, Angræcum Sanderianum, the pretty Vanda cœrulescens, the handsome Cyp. Rothschildianum magnificum, the curious Bulbophyllum tremulum, various Masdevallias and others.

May 2nd, 1924.

DIPLOMAS OF MERIT.

Odontoglossum Fascinator aureum, Craven Moore's var. (Adrianæ × crispum), from Dr. F. Craven Moore. A beautiful light, pure yellow flower of fine shape and habit. Segments of clear yellow, the labellum lightly blotched with red.

Odontioda Red Cross, Craven Moore's var. (Oda. Cooksoniæ × Odm. ardentissimum), from Dr. Craven Moore. A medium-sized flower of fine shape, having the segments of rich terra-cotta red with a narrow white margin. The labellum white, with a few terra-cotta red blotches.

GROUPS.

Dr. F. Craven Moore, Manchester, staged a grand group, having a frontage of 15 feet, and containing over 50 choice Odontiodas and Odontoglossums, all selected varieties carrying full spikes of flowers. Dendrobiums occupied the central area.

B. J. Beckton, Esq. (gr. Mr. W. A. Stewart), exhibited a mixed group including Dendrobium arachnites, Nanodes Lankesteri, various Epidendrums, as well as Masdevallias and Miltonias.

Sir William Thom, Blackburn (gr. Mr. R. Williams) staged a small group of Odontoglossums, among which were a fine variety of Pescatorei and various unnamed seedlings.

Messrs. A. J. Keeling & Sons showed fine examples of Lycaste Skinneri var. Mrs. Hamilton Smith and rare Masdevallias.

Messrs. Mansell & Hatcher exhibited Brassocattleya Oberon and the fine Odontoglossum crispum Venus.

CORRECTION.—In the report of the Manchester Orchid Society, March 14th (p. 159), the plants stated to have been exhibited by Mrs. Bruce and Miss Wrigley were shown by A. Hanmer, Esq., Buxton. A Silver-gilt Medal was, however, awarded to Mrs. Bruce and Miss Wrigley for a collection of Lycaste Skinneri, the varieties including that known as Mrs. Hamilton Smith and others.

MANCHESTER ORCHID SOCIETY.

March 28th, 1924.

MEMBERS of the Committee present :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, J. Cypher, J. Evans, G. Giles, Capt. W. Horridge, J. Howes, A. Keeling, E. W. Thompson, J. Whitham, and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES.

Vuylstekeara Brewii, Haddon House, var. (Oda. Brewii × M. vexillaria), from P. Smith, Esq., large flower, dark maroon, broadly developed lip of lighter shade and strongly veined.

Odontoglossum Doreen var. The Belle (eximium × Empress of India), from P. Smith, Esq., large flower of good shape, sepals heavily blotched, petals deep reddish-chocolate, margined with white.

Odontoglossum crispum, West Point Model, from Mrs. Gratrix, large round white flower of good substance, flat lip slightly blotched.

Odontoglossum crispo-Solon var. Gratrixiæ, from S. Gratrix, Esq., fine flower, perfect formation, heavily blotched.

AWARDS OF MERIT.

Odontioda Renown var. Victor (Oda. Coronation × Odm. Victory) ; from A. Hanmer, Esq.

Odontoglossum Lawrentia lilaceum (Jasper × Olympic) ; from P. Smith, Esq.

Odontonia Thais (M. Bleuana × O. Aglaon) ; from Messrs. Charlesworth & Co.

CULTURAL CERTIFICATES.

To Mr. J. Evans, for Cattleya Douai and C. White Queen.

To Mr. E. W. Thompson, for Odontoglossum Laurentia lilaceum.

Messrs. Cypher and Sons, were awarded a Silver Medal for a fine exhibit of Dendrobiums and various species.

Mr. D. McLeod staged Odm. crispum meleagris.

April 25th, 1924.

Members of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, H. Astley Bell, A. Burns, A. Coningsby, D. A. Cowan, J. Cypher, J. Evans, G. Giles, J. Howes, J. Jackson, A. Keeling, E. W. Thompson and H. Arthur (secretary). Mr. McBean was invited to sit with the Committee.

FIRST-CLASS CERTIFICATES.

Odontoglossum Everest (Princess Mary × Mirabeau var. Mastiff), from Mrs. Gratrix. A grand hybrid bearing flowers almost six inches across, heavily spotted with chocolate-brown on white ground, large flat lip with bright-yellow crest.

Odontoglossum crispum Albatross, from Mrs. Gratrix. One of the finest forms, flowers large and of thick substance, broad white petals frilled, sepals slightly rose-flushed, lip white and bearing a large blotch of chestnut-brown.

Odontoglossum The Prince, from S. Gratrix, Esq. Large flower of fine formation, richly blotched and spotted with violet-purple.

Odontoglossum Aglaon majesticum, from H. T. Pitt, Esq. The finest form seen of this popular hybrid, flowers heavily blotched with reddish-chocolate on white ground, lip large and bearing a deep-yellow crest.

AWARDS OF MERIT.

Odontoglossum Fascinator aureum var. Starlight; Odontioda Coronation, Orchidhurst variety; Cattleya Osprey; from S. Gratrix, Esq.

Odontoglossum crispum Lorraine; Odontioda Zarina; Odontoglossum Penelope, from H. T. Pitt, Esq.

Odontoglossum promerens var. Colossus; Odontioda Beta var. Sultan; from Mrs. Gratrix.

Brassolæliocattleya Rumania; from J. McCartney, Esq.

Odontioda Cainiæ; from P. Smith, Esq

GROUPS.

S. Gratrix, Esq., (gr. Mr. J. Howes), staged a group to which a Gold Medal was awarded. H. T. Pitt, Esq., received a Silver-gilt Medal. Mrs. Bruce and Miss Wrigley received a Large Silver Medal, as also did A. Hanmer, Esq., and J. McCartney, Esq. Other exhibitors included Messrs. Cypher & Sons, who received a Large Silver Medal, Messrs. Keeling & Son, and Messrs. Cowan & Co., all of whom brought many attractive plants.

———

May 9th, 1924.

Members of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, J. Cypher, J. Evans, G. Giles, Capt. W. Horridge, J. Howes, A. Keeling, D. Losh Thorpe, J. McCartney and H. Arthur (secretary).

FIRST-CLASS CERTIFICATES

Odontoglossum Diamond magnificum; from S. Gratrix, Esq. Large flower beautifully marked with reddish chocolate.

Odontoglossum Fabia, West Point var.; from S. Gratrix, Esq. Large flower, white, with distinct maroon markings on the petals.

Odontoglossom St. Nicholas var. Perfection; from Mrs. Gratrix. A well formed flower, beautifully marked.

Odontoglossum Arachne var. Wallhouse: from Jas. Wood, Esq. Fine flower, heavily marked with crimson.

(*To be concluded.*)

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To face p. 192.

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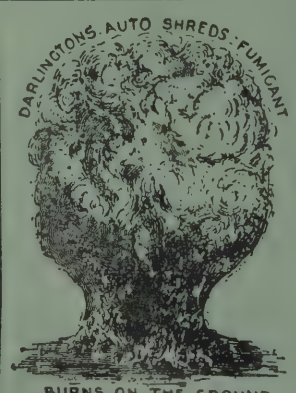

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To face p. 193.

THE ORCHID REVIEW.

VOL. XXXII.] JULY, 1924. [No. 373.

NOTES.

BRITISH DACTYLORCHIDS.—The *Journal of Botany* for June contains a Comparative Table of British Dactylorchids, by M. J. Godfery, T. Stephenson, and T. A. Stephenson. The authors state that "it seemed preferable to attempt a table of this sort rather than a 'Key,' in using which one mistake might lead to others." The species described are Orchis incarnata, O. prætermissa, O. purpurella, O. latifolia, O. maculata, and O. elodes. No account has been taken of hybrids, which must be determined by careful comparison with parent-forms on the spot.

NEW COLOUR SCHEME IN CYMBIDIUMS.—Recent experiments in Sir Jeremiah Colman's collection at Gatton Park have resulted in the production of Cymbidium hybrids having a new form of colour arrangement in the labellum. Some of these novelties were derived from C. Lowianum concolor, and while the general colour of the flower is light greenish-yellow, there is a broad area of white on the front of the labellum, the contrast being very pleasing. It is intended to follow up this break-away from the normal colouring by selective breeding, and to obtain improved varieties. In the future we may see a coloured flower having a wholly white labellum.

GERMINATION OF ORCHID SEED.—At the meeting of the Linnean Society, May 1st, 1924, Mr. J. Ramsbottom showed, on behalf of Mr. Edward Clement, seedlings of Odontoglossum, Dendrobium, Cattleya and Cymbidium—both on culture medium in tubes, and potted out—which had been germinated without fungal aid. A series of lantern slides were shown, illustrating the mycorrhiza of Orchids and the manner in which the fungus infects the seeds and stimulates germination. The work of Bernard and Knudson in inducing germination by chemical means was outlined. All previous success was gained with seeds which are easily germinated. The present cultures showed that with suitable media about 90 per cent. of Odontoglossum seeds could be got to germinate, and that normal growth continues after transfer from the medium to potting materials. Experiments so far seem to show, however, that Odontoglossum is so exacting in its

needs that the slightest variation in the composition of the medium suitable for the seed of one species may be distinctly out of favour with the seed of an allied species, and a modification be necessitated.

SCALE OF POINTS FOR JUDGING.—The following scale of points was used for judging at the recent Boston Show of the American Orchid Society: For groups of Orchid plants: General arrangement, 20; cultural perfection, 20; quality of flowers, 20; rarity, 15; variety, 20; correctness in labelling, 5; total, 100. For single specimen Orchid plants: Size of plant, 25; cultural perfection, 20; rarity, 15; floriferousness, 10; quality of bloom, 20; colour, 10; total, 100.

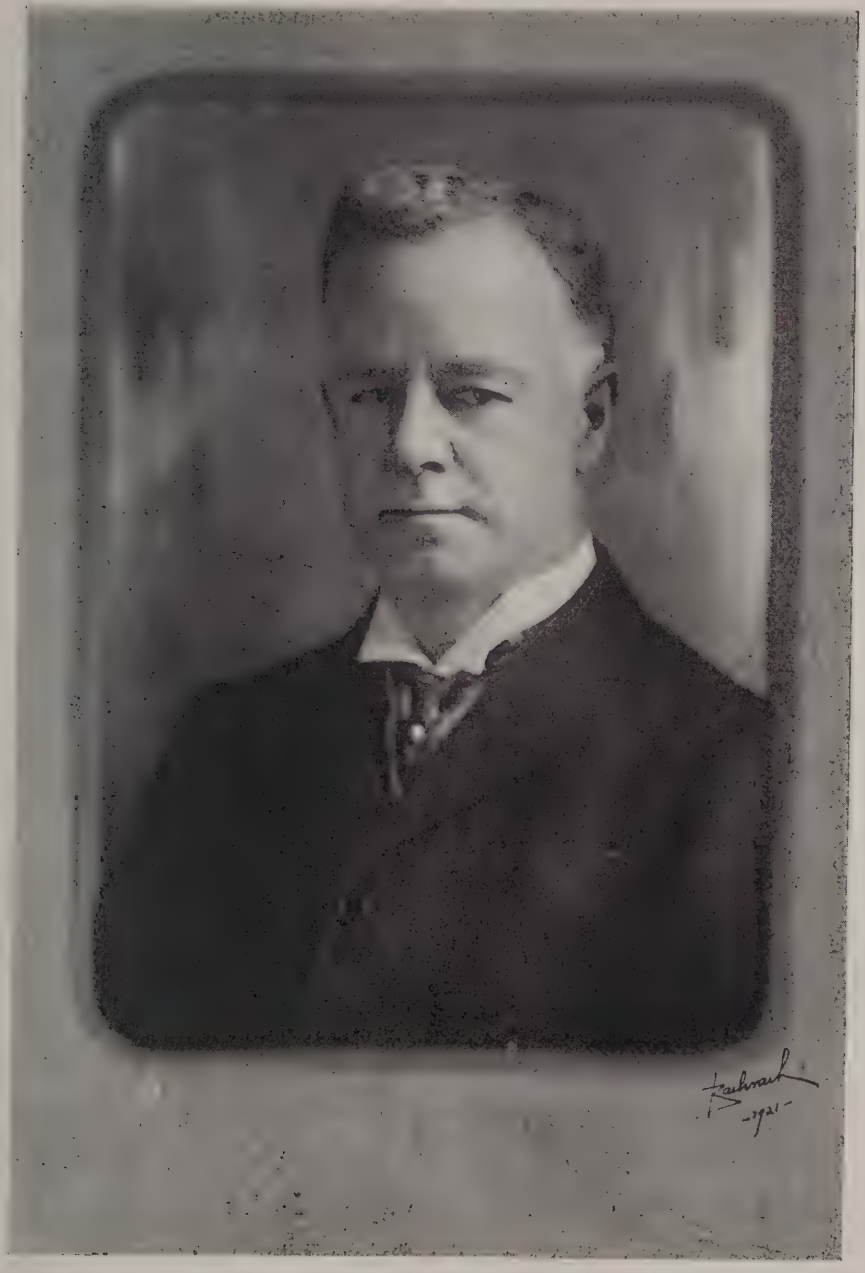
THE ORCHID CLUB.—At the first Annual Meeting of the Orchid Club, held at Manchester on June 6th, the following were elected:—President, Lieut.-Col. Sir George Holford, K.C.V.O.; Vice-presidents, Hon. Henry D. McLaren, Dr. F. Craven Moore, Mr. George F. Moore, Sir William Thom; Treasurer, Mr. J. H. Walker; Honorary Secretary, Mr. B. J. Beckton; also the following as members of the Committee, Mr. A. T. Cussons, Dr. R. N. Hartley, Mr. W. Morton Jackson, and Dr. F. T. Paul.

SALE OF THE ASHTEAD PARK COLLECTION.—On May 6th, 7th, and 8th, Messrs. Protheroe & Morris sold by auction the well-known collection of Orchids formed by the late Mr. Pantia Ralli, of Ashtead Park, Surrey, when the following prices were obtained:—Odontoglossum illustre Europa, 11 gns.; O. St. George, figured in the *Orchid Review*, vol. xxx., p. 361, 60 gns.; O. Dodeham, 16 gns.; O. Fabia, Ralli's var., 33 gns.; O. eximium var. Arghiro, 11 gns.; O. triumphans var. Lionel Crawshay, 9 gns.; O. crispum var. Beauty Spot, 21 gns.; O. crispo-Solon var. Carminetta, figured in the *Orchid Review*, vol. xxx., p. 45, consisting of 1 old bulb and a strong growth, 125 gns.; O. Doreen var. rotundum, 9 gns.; O. Goldcrest, 11 gns.; O. crispum var. Silver Moon, 8 gns.; O. Adula, 14 gns.; O. eximium var. Mabel, 11 gns.; O. George V., 11 gns.; O. promerens xanthotes, 12 gns.; O. St. George var. Amethyst, 8½ gns.; Læliocattleya Aureole var. Renown, 20 gns.; Lc. Excelsior var. The Globe, 8½ gns.; Lc. Soulange var. Brilliant, 13 gns.; Odontioda St. Quintin, 14 gns.; Cattleya Warscewiczii alba var. Firmin Lambeau, 4 bulbs, 12 gns.; Vanda cœrulea King of the Blues, 13 gns.; Sophronitis grandiflora Lowii, two plants, with a total of 60 bulbs, 25 gns.; and seven choice Cattleya hybrids, 72 gns.

DISPOSAL OF THE "TYNTESFIELD" COLLECTION.—The old-established collection of Orchids formed by the late Mr. Fred Hardy, of "Tyntesfield," Ashton-on-Mersey, is to be sold by private treaty. Full particulars may be obtained from Messrs. A. J. Keeling & Sons, Westgate Hill, nr. Bradford.

MR. ALBERT C. BURRAGE.

AMONG the many patrons of horticulture, but few have worked more diligently or achieved greater results than Mr. Albert C. Burrage, the worthy President of both the American Orchid Society and the Massachusetts Horticultural Society. While a trustee of the latter Society



ALBERT C. BURRAGE, ESQ.

he was awarded a diploma "in recognition of the magnificent and comprehensive exhibit of Orchid plants in flower and of the educational and interesting manner in which they were displayed."

The George Robert White Medal of Honour, America's highest horticultural award, was in 1922 presented to Mr. Burrage. Among the

specific accomplishments which won him this distinction were the exhibition of tropical Orchids in 1920; the display of Orchids every month during 1921; his native Orchid exhibition in the spring of 1921, as well as extensive groups of Orchids on subsequent occasions. The official vote unanimously adopted by the trustees of the Massachusetts Horticultural Society at their meeting on May 8th, 1922, is as follows:—

"Voted, that in recognition of his conspicuous service to horticulture by the establishment in Beverley, Mass., of the greatest collection of exotic Orchids the New World has yet seen; by his skilful and energetic management of his labours to increase the love, protection, and cultivation of New England wild flowers and ferns through his remarkable exhibition in Boston of these plants in the Spring of 1921 and of 1922, the George Robert White Medal, given only to those men and women who in recent years have done the most for horticulture, be now awarded by the trustees of the Massachusetts Horticultural Society to their President, Albert C. Burrage."

Among the many other honours that have come to Mr. Burrage, we may mention the dedication of the thirty-first volume of the *Orchid Review*, and his election in April last as an Honorary and Corresponding Member of the Royal Horticultural Society.

AMERICAN ORCHID SOCIETY.—At the Annual Meeting of the American Orchid Society, held in Horticultural Hall, Boston, May 9th, Mr. Albert C. Burrage was again elected president, and other officers as follows: Vice-presidents, Prof. Oakes Ames, North Easton, Mass.,; Dr. George T. Moore, St. Louis, Mo.; Mr. F. E. Dixon, Elkins Park, Pa.; Mrs. Pierre S. du Pont, Kennett Square, Pa.; and Mr. W. A. Manda, South Orange, N.J. Treasurer, Mr. Louis Burk, Philadelphia, Pa. Secretary, Mr. Alfred J. Loveless, Lenox, Mass. Trustees for three years, Mr. Joseph Manda, West Orange, N.J.; Mr. George E. Baldwin, Mamaroneck, N.Y.; Mr. J. J. Murdoch, Larchmont, N.Y.; and Mr. Clement Moore, Hackensack, N.J. Trustee for two years, Miss Marion R. Case, Weston, Mass. Trustees for one year, Mr. David S. Vesey, Fort Wayne, Ind.; Mr. Joseph B. Widener, Elkins Park, Pa.

SANDERS' LIST OF ORCHID HYBRIDS.—The first permanent Triennial Supplement to Sanders' *Orchid Hybrid List* has been published. This 48-page addenda enumerates over one thousand hybrids recorded during the years 1921, 1922 and 1923. It includes, and therefore cancels, the temporary addenda issued with the main volume in 1921. Copies may be obtained from Messrs. Sanders, price 7s. 6d., post free.

MEDAL OF THE AMERICAN ORCHID SOCIETY.

THE American Orchid Society is to be congratulated on possessing a medal of outstanding merit and beauty. It was artistically designed by Mrs. Oakes Ames, who skilfully worked in the leading features of the Orchid family by appropriately representing the monandrous and diandrous sections. On the obverse side an American Indian is seen adoring the flowers of an epiphytal species, while at the foot is a flower of Selenipedium caudatum, representing the terrestrial kinds.

LARGE GOLD MEDAL OF THE AMERICAN ORCHID SOCIETY.

The reproduced photograph shows the first example struck of the Large Gold Medal of the American Orchid Society. It bears on the reverse side, "Gurney Wilson, for Eminent Service to Orchidology," and was presented to him by the President, Mr. Albert C. Burrage, on the occasion of a dinner given to the Trustees of the Society and Judges of the Exhibition, May 9th, 1924.

PELORISM IN ODONTOGLOSSUM CRISPUM.—An attractive plant in Sir Jeremiah Colman's group at Chelsea Show was an Odontoglossum which had been raised by crossing O. crispum var. Lady Jane with another somewhat similar variety in the way of O. crispum var. Oakwood Sunrise. The petals in both parents bear markings which cause them to resemble additional labellums, hence they are regarded as peloriate forms. In the above-mentioned plant these peculiar markings are strongly reproduced, and afford evidence that when parents of peloriate form are used a proportion of the resulting seedlings may be expected to display similar characters. Another example of the inheritance of pelorism exists in various seedlings of Cattleya intermedia Aquinii, raised by Messrs. Stuart Low & Co., and of which Cattleya Suavior var. Aquinii may be mentioned.

AMERICAN ORCHID SOCIETY.

EXHIBITION AT BOSTON, MAY 8TH TO 11TH, 1924.

EVER since the time when preparations were commenced for an Exhibition of Orchids at Boston, the various officials of The American Orchid Society worked with commendable energy to accomplish the task set before them. The preliminary schedule, drawn up and published in the autumn of 1923, afforded an early impression of the comprehensive nature of the scheme, which was to have a truly national exhibition embracing all sections of amateur and trade collections. The second edition subsequently appeared, and in due time the final schedule was issued, giving a detailed list of no less than 74 classes, comprising special divisions for amateurs, commercial growers, cultivators of hardy native Orchids, and also for cut flowers.

Valuable co-operation was given by the Massachusetts Horticultural Society, more especially in offering the free use of their spacious building, known as Horticultural Hall, Boston. This generosity was fully appreciated and led to the Orchid Exhibition being opened without any charge to the public. At the opening hour on Thursday, May 8th, the large building was quickly filled with an enthusiastic gathering, while on each of the following days the attendance tested the building to its utmost capacity. On Sunday no less than 28,000 people visited the Exhibition, and on several occasions during the day the entrance doors had to be closed, so great was the crowd. Owing to the fact that many thousands were unable to gain admission on that day, the show was continued until Tuesday night.

The Judges appointed were: Mr. Gurney Wilson, F.L.S. (Chairman), Dr. Geo. T. Moore, Director of Missouri Botanical Gardens, and Mr. Clement Moore, Hackensack, N.J. These authorities had the assistance, as advisory Judges, of Prof. Chas. S. Sargent, Director of the Arnold Arboretum; Prof. Oakes Ames, Harvard University; Mr. Thomas Allen, Director of the Boston Fine Art Galleries; Mr. Louis Burk, Philadelphia; Miss Marion R. Case, Weston, Mass.; and Mr. H. W. Child, Boston.

The outstanding feature of the exhibition was the wonderful display of Orchids from the garden of Mr. Albert C. Burrage, the worthy President of the Society. Never before in the history of Orchid cultivation has any one person shown so much enthusiasm or brought together such a comprehensive assemblage of plants as did Mr. Burrage. The Gold Medal of the Royal Horticultural Society was presented to him in recognition of the educational value of his respective groups, as well as for the meritorious nature of the individual specimen plants. He also won the Large Gold Medal offered by the American Orchid Society, the Silver Cup presented by members of the English trade growers for the best Orchid in the Show, which proved to be

BOSTON ORCHID SHOW: VIEW OF THE WATERFALL IN MR. BURRAGE'S PRAISEWORTHY EXHIBIT.

Brassolæliocattleya Jupiter, with a spike of three well-developed flowers, and many other prizes.

One of the large halls was entirely devoted to the exhibits of Mr. Burrage, his ambition being to give, through bird's-eye views, a general idea of the wide distribution and variety in form and colour of wild species in flower, and then by separate groups a clearer conception of the habitat and environment of the twelve most highly prized genera, such as Cattleya, Lælia, Oncidium, Odontoglossum, Miltonia, and Masdevallia, of South America; Cymbidium, Dendrobium, and Vanda cœrulea, of East India; Phalænopsis and Vanda, of Java; Phalænopsis Aphrodite, of the Philippines; and Angræcum, of Madagascar; also the semi-tropical Orchids of Florida; and then, by contrast, four hardy New England terrestrial Cypripediums, and finally, what may be called a world group to illustrate the growth and development, through horticulture in modern greenhouses, of the species and hybrids derived from them.

In order to give a realistic setting to his various groups, Mr. Burrage sent competent men to Florida, a distance of about 2,000 miles, to secure several large Coconut Palms, standing some 40 feet high, weighing five tons each, and bearing clusters of ripe nuts. These were placed in suitable positions and greatly adorned the hall. In the area devoted to Burmese Orchids, a bamboo hut, having the roof thatched with foliage from the Fan Palm, was erected, while in the Philippine section another hut of similar size had the sides also thatched. The outside walls of these huts were adorned with flowering plants of native Orchids.

Great as these attractions were, the sound of falling water drew visitors to the end of the hall, where over a hundred tons of rockwork had been utilised in the construction of a cliff forty feet in height, and from near the top of which water dashed down at the rate of 180 gallons a minute, and sprayed the surrounding rocks, among which numerous terrestrial Orchids were arranged. A few feet from the base of this waterfall was a large tree, in an inclined position, weighing nearly four tons, and bearing many epiphytal Orchids. The whole effect was extremely fascinating, and will long be remembered by all who saw it.

Along the sides of the hall were the geographical groups arranged by Mr. Burrage. His group of Philippine Orchids contained several dozen specimens of Cypripedium Haynaldianum, first introduced to cultivation in 1873, by Messrs. Veitch, and a number of Phalænopsis Schilleriana and P. Aphrodite, secured to the trunk and branches of a large tree. South American Orchids were represented by various Cattleyas, Oncidiums, Brassias, Lycastes, Maxillarias, and Odontoglossum citrosmum, which looked very pretty with its pendulous flower spikes. All these plants were arranged on large trees, so as to give as natural an effect as possible. On

another tree were various cool-growing Orchids from South America, including Odontoglossum crispum, O. triumphans, and various Odontiodas.

Orchids of Florida comprised several Epidendrums, such as cochleatum,

VIEW IN THE PHILIPPINE SECTION OF MR. BURRAGE'S EXTENSIVE EXHIBIT.

nocturnum, rigidum, anceps and tampense, while Oncidiums were represented by luridum. Cyrtopodium and Polystachya were also included. Mr. Burrage devised an original method of staging these in a natural state, as also did he with regard to Orchids of East India, the kinds included being Cymbidium Lowianum, C. Devonianum, Vanda cœrulea, and various

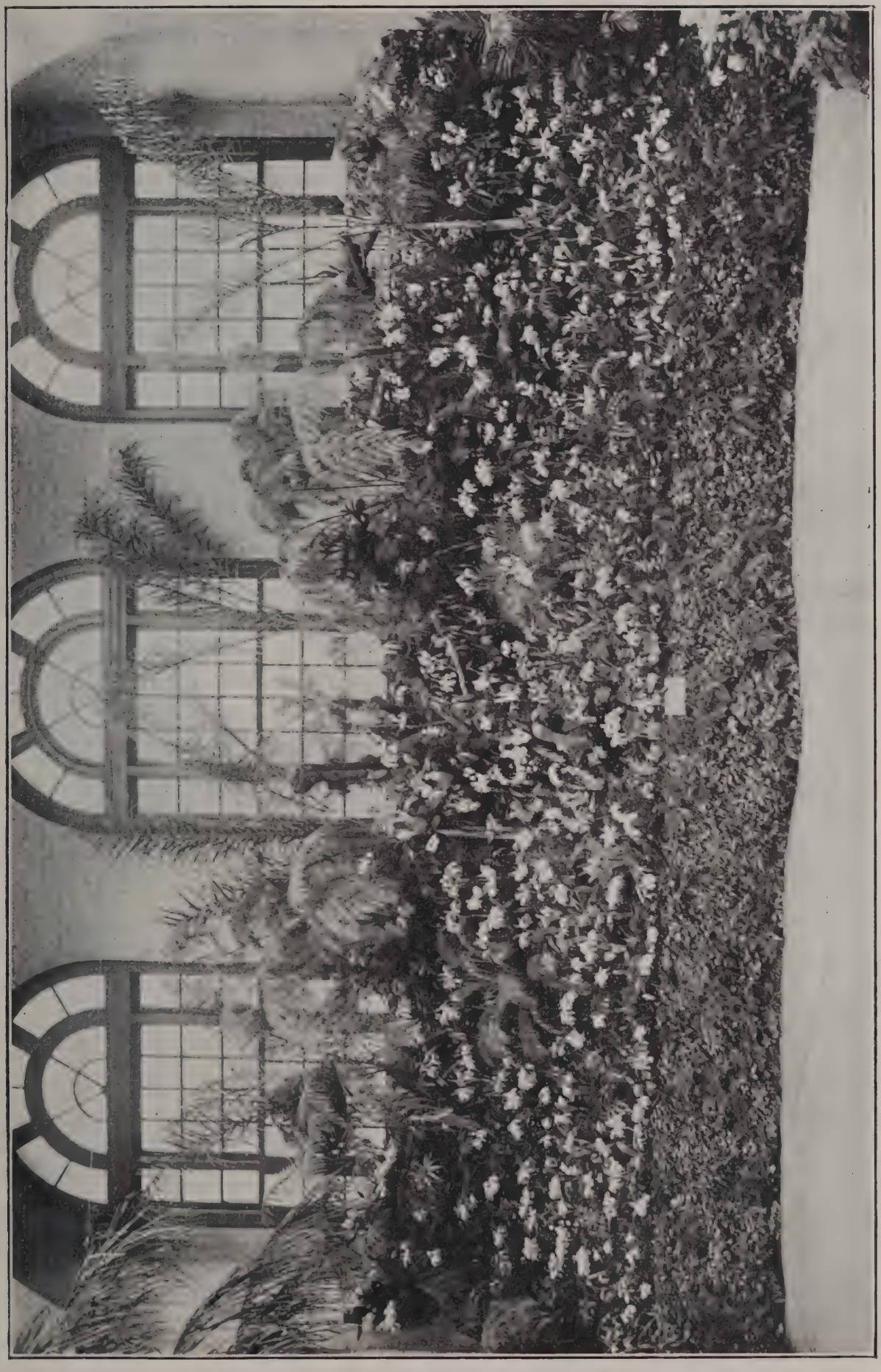
Dendrobiums. Even Madagascar was represented, the plant of Angræcum sesquipedale carrying several of its comet-like flowers.

Javan species were seen in Phalænopsis Rimestadiana, arranged on the topmost branches of a tree, Vanda tricolor, including several distinct varieties, and V. Wallichii. Oncidiums were well arranged in another section, and comprised tigrinum, monachicum, ampliatum and splendidum, all in the best flowering condition. A group of New England hardy Cypripediums was prettily arranged under a cluster of pine trees, C. acaule being very pleasing. Vanilla planifolia was exhibited growing on a tree-trunk. Mr. Burrage was awarded the Large Gold Medal offered by the Massachusetts Horticultural Society for the most original and effective exhibit illustrating the manner in which epiphytal Orchids grow upon trees, also the Large Gold Medal of the American Orchid Society for his group of semi-tropical Orchids of Florida.

In the class for a group covering 250 sq. ft., and embracing at least 15 genera or bi-generic hybrids, Mr. Burrage was easily first. His group occupied the centre of one side of the hall and was most artistically arranged. High up on the top branches of tall trees were numerous flowering examples of Phalænopsis, as well as Vanda cœrulea, while lower down were many Odontiodas, the one distinguished as Miss Alice Burrage carried 16 flowers, and that known as Nobworth var. Russell Burrage had as many as 17 flowers. Cymbidiums were also used, and included Devonianum, with a pendulous spike, while Angræcum sesquipedale formed a suitable object for more than one aspiring artist. In the centre was Brassolæliocattleya Jupiter, with a spike of three grand flowers, and to which the Silver Cup of the English Trade Growers was awarded, the judges considering it the best Orchid in the Show. On either side were excellent Cattleyas, embracing such well-known hybrids as Tityus, Hardyana, and its variety alba, superb forms of Mossiæ, as well as Mendelii, Schrœderæ alba, and several novelties. Brassia verrucosa, with several spikes of bloom, Cœlogyne pandurata, very well flowered, fine examples of Cypripedium Curtisii Sanderæ, and many elegant Brassavola hybrids. Touches of red were added by Renanthera matutina, and yellow areas by Dendrobium Thwaitesiæ. In our illustration of this group it will be noticed that the staging was hidden by ornamental foliage plants, these having been established previously on wooden frames and moved in sections to the hall. Awarded American Orchid Society's Large Gold Medal.

On the opposite side of the hall, Mr. Burrage had a grand exhibit of Cymbidiums, embracing all the popular species and hybrids; the plants were well cultivated, and secured for their owner the Silver Cup presented by Mr. Jere A. Downs.

Another praiseworthy exhibitor in the Amateur's Class for 250 square



BOSTON ORCHID EXHIBITION : GROUP OF SPECIES AND HYBRIDS SHOWN BY MR. ALBERT C. BURRAGE.

feet was Mr. F. E. Dixon, Elkins Park, Pa. (gr. Mr. J. Goodier). His exhibit occupied the central position in an adjoining hall, and was artistically planned, the upper arrangement being excellent, but the plants on the ground area were rather crowded. Among the specimens included were Cattleya Skinneri delicata, with 15 flowers, several of Miltonia flavescens, a large one of Maxillaria tenuifolia, and several Oncidiums. Dendrobiums were represented by about 30 varieties, while the genus Phalænopsis was seen in good plants of Lueddemanniana, amabilis, and Schilleriana. Vanda tricolor and V. Parishii were in fine form. Cœlogyne Dayana was placed high up on one of the arches, a position that allowed its pendulous flower-spikes to look at their best. Epidendrum Stamfordianum Wallisii carried many flowers, while E. radicans and E. Boundii were equally fine, the latter having been raised in Mr. Dixon's collection. On the ground level were numerous Læliocattleyas and other hybrids. A Large Gold Medal was awarded for the artistic display seen in this exhibit, as well as a small Gold Medal for the group, and a Silver Medal to the gardener, Mr. J. Goodier.

Mr. Arthur N. Cooley, Pittsfield, Mass. (gr. Mr. Oliver Lines), won the Gold Medal offered for the best Amateur's Group covering an area of 100 square feet. The excellent quality of the individual plants was specially noteworthy, and mention may be made of Cattleya Mossiæ Reineckiana with four immense flowers, C. Schrœderæ var. Queen of the Belgians, which had been in flower for seven weeks, and C. Schrœderæ var. Gurney Wilson, a very pretty form, having rose-coloured veining throughout all the blush-tinted segments. Finely cultivated Cymbidiums and Renantheras occupied the back rows, and many choice Odontiodas and Miltonias of the vexillaria section were in foremost positions Sophrolæliocattleya Meuse var. Nivelle had a couple of richly-coloured blooms, Læliocattleya Joy Sander was in good form, and Brassavola hybrids were best represented by the richly-coloured Bc. Dietrichiana and the large Bc. Vilmoriniana. The superior cultivation of these plants gained for their grower, Mr. Oliver Lines, a Small Gold Medal.

Mr. Edwin S. Webster, Chestnut Hill, Mass. (gr. Mr. Arnott), was awarded a Gold Medal for the best Amateur's Group covering 50 square feet. Noteworthy plants were Cattleya citrina, fine forms of C. Mossiæ, albino Cattleyas, and large Cymbidiums in the background. Dendrobiums were well flowered, and a fine assortment of Masdevallias gave depth of colour. Læliocattleya Hyeana and Lc. G. S. Ball stood out well, as also did Vanda tricolor. A feature of this exhibit was Miltonia vexillaria, one of which secured the Silver Medal offered for the best Miltonia.

In the Classes for Commercial Growers there were several praiseworthy exhibits. For a group embracing at least 15 genera or bi-generic hybrids,

BOSTON ORCHID EXHIBITION: GROUP OF SPECIES AND HYBRIDS SHOWN BY MR. F. E. DIXON.

and covering 250 square feet, Mr. J. T. Butterworth, Framingham, Mass., was first. This exhibitor also won the special prize of the Society of American Florists and Ornamental Horticulturists for the most artistically arranged group. Læliocattleyas were numerously represented, and careful grading of the dark-lipped forms was to be seen, until in the central area pure-white flowers predominated. Dendrobiums and Phalænopsis Rimestadiana were also included, while fine varieties of Cattleya species and various Cypripediums were conspicuously staged. Large Gold Medal.

Mr. Ed. H. Roehrs, Rutherford, N.J., won the second prize in the Commercial Section for a group of 250 square feet. Noteworthy plants were Cattleya Mossiæ var. President Burrage, fine forms of Læliocattleya Dominiana, a well grown Renanthera coccinea, Cattleyas in variety, and a finely cultivated example of Dendrobium suavissimum in the centre. Cypripediums Rothschildianum and several Epidendrums looked well alongside of Miltonia Rœzlii. Silver Medal.

For a group of Orchids covering 100 square feet, Messrs. Lager & Hurrel, Summit, N.J., were placed first. This firm staged excellent examples of Vanda Parishii Marriottiana, Bifrenaria Harrisoniæ, various Oncidiums, and a fine lot of Cattleya Mossiæ. Other notable species were Cœlogyne pandurata, the handsome Angræcum sesquipedale, and Lycaste cruenta. Gold Medal.

Mr. Thomas Roland, Nahant, Mass., received a Small Gold Medal for a group occupying 50 square feet. The arrangement was very effective, large tree-trunks were at the back, and on these flowering examples of Odontoglossum citrosmum were placed so that their pendulous spikes were seen at their best. O. crispum was similarly treated. Blotched Odontoglossums and Odontiodas were also noticed, while in the foreground were many fine varieties of Cattleya Warscewiczii. This exhibitor also won the second prize in the class for a group of Odontoglossums.

In the class for the best original arrangement of Orchids, the Silver Cup presented by Mr. Thos. Roland was won by Mr. George E. Baldwin, Mamaroneck, N.Y., who used gilded baskets containing selected species and hybrids. Other plants in this group comprised Miltonia flavescens, Dendrobium Thwaitesiæ, D. melpomene, D. nobile album, Læliocattleya Isabel Sander, with white sepals and petals, Bc. Mrs. J. Leemann, and a pleasing example of Blc. Everest. Mr. Clement Moore, Hackensack, N.J. (gr. Mr. Hannington), was placed second in this class, his exhibit consisting of various genera arranged with a heavy background of dark-green foliage. Silver Medal.

For the collection of Orchids of botanical interest, not necessarily in flower, Mr. A. C. Burrage won the Silver Plate presented by Mr. Galen L. Stone. The second prize of a small Silver Cup was secured by the

Missouri Botanical Gardens, St. Louis, Mo. Messrs. Lager & Hurrell, Summit, N.J., also exhibited. In all cases a wide selection of rarely-seen species was staged.

The Silver Cup offered by Mr. Burrage for an exhibit of hybrid Orchids of known American origin was secured by Mr. Clement Moore (gr. Mr. E. Hannington), who staged Læliocattleya luminosa aurea, Lc. Fascinator, Cattleya Empress, with six flowers, and C. Minnetonka (Octave Doin × Lueddemanniana). A Silver Medal was awarded to Mr. E. J. Hannington for superior cultivation of these plants.

For a group of Cypripedium species and hybrids covering 50 square feet, the Silver Cup presented by Mrs. Albert C. Burrage was won by Mr. Thomas Roland, who staged a number of well-grown C. Lawrenceanum arranged around a small pond of water. Other kinds were C. Gowerianum, Maudiæ, Boltonii, and barbatum. The second prize went to Mr. Ernest B. Dane, who also arranged his plants around a miniature pond, the varieties including excellent examples of C. Maudiæ, Rothschildianum, Mastersianum, Lord Derby, and Olivia.

Mr. Ernest B. Dane was awarded a small Gold Medal for an attractive exhibit occupying the end of one of the halls, while the Gold Medal of the National Association of Gardeners was given to his gardener, Mr. Donald Mackenzie. In the centre of this exhibit was a well-flowered plant of Cœlogyne cristata, and on either side many fine plants of Cattleya Mossiæ and C. Skinneri. High up were examples of various Phalænopsis, Cymbidiums, and Oncidiums, while Masdevallias and a fine plant of Selenipedium Uranus were prominently displayed.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey, received the Society's Large Gold Medal for a selection of Orchids sent in full flower from England. They included excellent examples of Lycaste Skinneri hellemensis, L. Skinneri alba, and the giant form known as L. Skinneri var. Mrs. Hamilton Smith, Bulbophyllum barbigerum, Brassocattleya Cliftonii magnifica, and a couple of richly-coloured Odontiodas.

Mr. F. E. Dixon, Elkins Park, Pa. (gr. Mr. Goodier), staged an interesting group of home-raised hybrids, including Lc. dellensis, flowering for the first time, Fascinator, Bella, luminosa, eximia, and Schilleriana, the latter producing a pure-white variety amongst several coloured forms. Cattleya Suavior var. C.G. Rœbling, produced by crossing Mendelii Bluntii with intermedia alba, had pure-white flowers.

Mr. William B. Berger, Denver, Colorado, received a Silver Medal for superior cultivation of Orchids under difficult climatic conditions; they had also travelled some 2000 miles in full flower.

The Silver Plate given by Mrs. Bayard Thayer for a group of Odontoglossums was won by Mr. A. C. Burrage, who exhibited many

superb varieties arranged on tree-trunks. The second prize was secured by Mr. Thomas Roland, who adopted a similar method, and showed many fine varieties of white and spotted kinds.

Mr. Albert C. Burrage also won the Silver Cup presented by Mr. H. H. Battles for a varied group of Masdevallias, the Silver Cup presented by Messrs. Daniel and Murray Guggenheim for the best exhibit of Phalænopsis species and hybrids, the Silver Cup presented by Mr. Thomas Young for the finest group of Odontiodas, and the Dupont Silver Cup for a group of any other genus—Oncidiums.

For a group of Dendrobium species and hybrids, Mr. Thos. Roland won the Silver Cup presented by Mr. Ernest B. Dane. This exhibit contained well-flowered examples of Ainsworthii, nobile Cooksoniæ, and chrysotoxum, while a grand plant of D. nobile was awarded a Silver Medal for exceptional cultivation.

In the class for twelve distinct species, Mr. Arthur N. Cooley, Pittsfield, Mass. (gr. Mr. Oliver Lines), was first with fine examples of Blc. Wotan, Bc. Crofutiana, Cattleya Mossiæ Reineckiana, and Cymbidium Beatrice. Small Gold Medal.

Specimen Orchids.

For a specimen Cattleya Mossiæ, Mr. A. C. Burrage came first, his plant being a fine example of cultivation, and bearing 22 flowers. This amateur also secured first prizes for specimens in the classes for Cattleya Skinneri, with seven many-flowered spikes; Cattleya Schrœderæ, with no less than 42 well-developed flowers; Lælia purpurata, with 33 flowers; Cymbidium Pauwelsii, with five many-flowered spikes; Odontoglossum egregium, with a spike of 18 flowers of claret-rose colour; Oncidioda Stuart Low, with a branching spike of bronze-red blooms; Odontioda La Brilliant, with a spike bearing seven soft-rose coloured flowers; and also for the best Oncidium.

For the best specimen Læliocattleya, Mr. Arthur N. Cooley won a Silver Medal with Lc. Mrs. Temple var. Dreadnought, bearing seven large and finely-coloured flowers. He also won a similar distinction with Slc. Meuse var. Nivelle, bearing four richly-coloured flowers, and a Large Gold Medal for Brassocattleya Princess Patricia, the best imported seedling not previously exhibited in the United States.

For the best Cypripedium, Mr. Thomas Roland secured first prize with C. Lawrenceanum, bearing four flowers of dark colour. Mr. Henry Stewart, Waban, Mass., received a Silver Medal for the best Dendrobium, which proved to be D. nobile, a large well-flowered plant. Mr. Edwin S. Webster came first for the finest plant of Miltonia vexillaria. Mr. F. E. Dixon, Elkins Park, Pa., won first prize for the best Oncidium, his exhibit being O. sphacelatum, with seven many-flowered spikes of golden-yellow

colour. For the best specimen Cœlogyne, Messrs. Lager and Hurrell staged C. pandurata, and secured first position. For the best hybrid of known American origin, not previously exhibited in the United States, by a member of the American Orchid Society, Mr. Clement Moore secured first prize (Large Gold Medal) with Cattleya Colin Shill, a richly-coloured flower obtained by crossing C. Kienastiana with C. Fabia.

For the best Cattleya Trianæ, Mr. F. E. Dixon was placed first, but probably on account of the late period for this species, the variety shown was below the ordinary standard. Mr. Thomas Roland secured first prize for the best specimen of Cattleya Warscewiczii. Messrs. Lager and Hurrell won first position with a plant of Cattleya Gaskelliana, bearing six flowers. Mr. Edward Roehrs deservedly won a Silver Medal for Cattleya Warneri alba, with three flowers. Mr. Arthur N. Cooley came first in the class for Brassocattleyas, his example being Bc. Digbyano-Mossiæ var. Queen Alexandra. Mr. A. C. Burrage secured first prize for the best Brassolæliocattleya by entering his superb Blc. Jupiter, to which also was awarded the Gold Medal of the Society of American Florists and Ornamental Horticulturists, offered for the best specimen Orchid in the Exbibition.

Hardy Native Orchids.

The Silver Cup presented by Miss Marion R. Case was awarded to Mr. Edwin H. Lincoln, Pittsfield, Mass., for a group of hardy North American Orchids, covering 10 sq. ft., arranged with native ferns.

For a group of Cypripedium acaule, covering 10 sq. ft., Mr. A. C. Burrage won the first prize. For a group of Cypripedium hirsutum, covering 10 sq. ft. Mr. Edwin H. Lincoln had the prize winning exhibit.

Other Exhibits.

Mr. M. J. Pope, Naugatuck, Conn., secured the first prize for a Basket of Orchids arranged for effect, while for a Bridal Bouquet, Mr. J. T. Butterworth, Framingham, was equally successful. There were no exhibitors in the class for cut Orchids open to European exhibitors only.

Mr. John Mutch was awarded a Silver Medal for a large group of Cattleya Mossiæ, the plants were well-flowered and added much to the attractions of the Show.

Mr. Edwin H. Lincoln received a small Gold Medal for an exhibit comprising over fifty large photographs of New England Orchids.

Prof. Oakes Ames showed a series of 14 excellent water-colour drawings by J. Macfarlane illustrative of the genus Cordula (Cypripedium). Silver Medal.

The Missouri Botanical Gardens received a Silver Medal for a series of coloured photographs illustrating the collecting and transporting of Orchids.

Mr. M. J. Pope was awarded a Silver Medal for two oil paintings depicting various Orchids.

Mr. Albert C. Burrage was awarded a small Gold Medal for his geographical display of Orchids, and Silver Medals for his groups of Philippine Orchids, of hardy Cypripediums native of New England, of Javan Orchids, of South American Orchids, and also for his exhibit illustrating various species and hybrids derived from them.

Mr. Frederick Pocock and Mr. Thomas W. Nason both received the Society's small Gold Medal for executive ability displayed in the arrangements of Mr. Burrage's various exhibits, while Mr. John L. Congdon was awarded a Silver Medal for his skill in erecting the rock-work and waterfall.

Mr. F. E. Dixon (gr. J. Goodier) received a Silver Medal for a well-cultivated example of Vanda tricolor, the flowers being large and richly coloured.

Mr. Arthur N. Cooley, Pittsfield, Mass. (gr. Mr. Oliver Lines), also exhibited in various classes some fine examples, including Odontioda Gladys, with a spike of 13 rose-margined flowers; Odontoglossum Pharos, with 9 large flowers of the amabile section; Oncidioda Cooksoniæ, with a branching spike of bronze-red flowers; Læliocattleya Canhamiana, with a deep-purple labellum; and Brassolæliocattleya Jupiter, a fine flower of pleasing coloration.

ORCHID BOOKS AND COLOURED DRAWINGS.

A SECTION of absorbing interest at the Boston Exhibition was the extensive collection of Orchid books and coloured drawings from the library of Mr. Albert C. Burrage, the worthy President of the American Orchid Society. Our illustration affords some idea of this assemblage of valuable records, which occupied the whole of one of the large halls of the Massachusetts Horticultural Society.

On three long tables were displayed about 500 volumes, containing several thousand coloured illustrations of Orchids. These important works comprised complete sets of *Lindenia*, with over 800 coloured plates; of the *Botanical Magazine*, 150 volumes, covering the period 1787 to 1920; of the rare *Botanical Register*, noteworthy for the early illustrations of species; and of the *Orchid Review*, of which 31 volumes have been published.

Special rarities were to be seen in Francis Bauer's *Illustrations of Orchidaceous Plants*, 1830-38, and in Du Peitit-Thouars' *Orchidées d'Afrique*, although the latter is unfortunately not in this example provided with any letterpress. Large Books were shown in Bateman's *Orchidaceæ of Mexico and Guatemala*, of elephant folio size; in the four handsome volumes of *Reichenbachia;* in Fitzgerald's *Australian Orchids*, with its beautifully executed plates; and in Lindley's *Sertum Orchidaceum*, published in 1838. One of the best examples of book-binding was seen in a complete set of the *Orchid Album*.

BOSTON EXHIBITION: ORCHID BOOKS AND COLOURED DRAWINGS FROM THE LIBRARY OF MR. ALBERT C. BURRAGE.

Another valuable work was exhibited in Goossens' *Dictionnaire Iconographique des Orchidées*, consisting of over 800 coloured plates with accompanying descriptive text. Last year, Mr. Burrage was able to secure the original coloured drawings prepared by M. Goossens for this work, and these, arranged on the walls of the hall, formed a fine insight to the extensive nature and wealth of the Orchid family. Another collection of coloured drawings was shown in upwards of 200 examples from the Leemann collection. Most of these depicted rarities of 25, or more, years ago, and, by comparison with present-day flowers, showed how great has been the advance in certain sections of Orchid breeding. It was a matter of surprise to look at some of the drawings of early-day varieties of Odontoglossum crispum and to realise, if possible, that First-class Certificates had been awarded to some of these plants.

Mr. Albert C. Burrage afforded practical illustrations of Orchid breeding by exhibiting on a table at the end of this hall various species and hybrids derived from them. Thus, Lælia tenebrosa and Cattleya aurea were shown as the parents of Læliocattleya luminosa, a plant of which stood in front; Cochlioda Nœzliana was shown alongside of Odontoglossum crispum, the resulting hybrid of these two species when crossed being seen in Odontioda Bradshawiæ; Cattleya Warscewiczii and C. aurea were exhibited in company with C. Hardyana; and Sophronitis grandiflora was staged with several Cattleyas to illustrate the making of a Sophrocattleya. All these plants were in flower, and added much to the interest of the surrounding water-colour drawings of species and hybrids. A Silver Medal was awarded to this group, and Special Diplomas to the collections of Orchid Books and Coloured Drawings.

HONOUR FOR PROF. AND MRS. OAKES AMES.—The Large Gold Medal of the American Orchid Society has been presented to Prof. Oakes Ames for eminent service to Orchidology, and also to Mrs. Oakes Ames in recognition of her artistic skill in designing the medal.

ODONTOGLOSSUM BLANDUM.—This species was first discovered by Blunt, while collecting in Colombia for Messrs. Low & Co., but whose plants perished during transmission to Europe. A similar fate befell the consignments of Rœzl and others. It appears to have first flowered under cultivation in the Royal Horticultural Society's Gardens at Chiswick, in 1871.

MAXILLARIA VARIABILIS.—A native of Mexico that was in cultivation in several European gardens in 1837, and perhaps earlier. It appears to have been first imported by Messrs. Low & Co. through Henchman. It is one of the scandent Maxillarias, and bears flowers an inch across the lateral sepals, variable in colour, type being sanguineous-purple.

SOME NOTES ABOUT ORCHIDS.*

By ALBERT C. BURRAGE.

THE ORCHID FAMILY (Orchidaceæ—from the Greek name Orchis), consists of over 400 genera (groups of species), divided into about 15,000 species; it is widely scattered over the earth, and is the most highly specialized, and probably the most numerous family in the vegetable kingdom.

ORCHID PLANTS are herbaceous perennials. Some are evergreen, some deciduous; some dwarf, some gigantic. They are divided into two classes: *Terrestrial* (living on the earth) and *epiphytal* (growing upon another plant). No Orchids are parasites: they obtain no nourishment from the living tissue of tree or branch upon which they are lodged. Most Orchid plants are aerial, that is, they obtain their food from the air and water, and the little organic and mineral matter falling upon them. They grow wherever there is much heat and moisture—that is, nearly everywhere except in polar regions and deserts. Terrestrial orchids are more numerous in the north temperate zone; epiphytal orchids grow only in the tropics and subtropics, from the wave-sprayed rocks at the hot sea-level to the snow-covered heights of over 14,000 feet. Some epiphytal Orchids grow, in India, as far north as 35 degrees N. Lat., and in Oceania as far south as 42 degrees S. Lat. But the great majority grow within one thousand miles of the Equator and at an elevation of from 2,000 to 6,000 feet, sometimes in the dense forest, but usually on trees and rocks on the borders of woods, rivers, brooks, ravines and open glades, in hot, moist, mountainous regions. Of the better known Orchids, Australia and South Africa furnish a very few; the southern part of Mexico, Central America, Colombia, Venezuela, Guiana, Brazil, Peru, Bolivia and Ecuador, and the West Indies, furnish Brassavola, Brassia, Cattleya, Lælia, Lycaste, Epidendrum, Masdevallia, Miltonia, Selenipedium, Sobralia, and Sophronitis. Asia and the islands of Oceania and Malaysia, furnish Aërides Calanthe, Cœlogyne, Cymbidium, Cypripedium, Phaius, Phalænopsis, Renanthera, Dendrobium and Vanda. Neither scientists nor hybridizers have been able to discover any affinity between any of these Orchids of the eastern and western hemispheres.

ORCHID FLOWERS are, in some cases, solitary, in others small and aggregated in masses, like the Aërides; in others they are bold and showy, like the Cattleya; in others, arranged in graceful drooping racemes and panicles with scores and sometimes hundreds of flowers. As a class they are the most interesting and most highly prized of all cultivated flowers, not merely because of their great rarity and the romance which comes with their gathering from remote countries—not merely because many are quaint

*Leaflet distributed at the American Orchid Society's Exhibition, May 1924.

and fantastic, not merely because both the plants and flowers are so tenacious of life—but because so many have such exquisite form and are so brilliantly beautiful as well as chastely delicate and sweetly fragrant. Because of their great diversity of form and colour, with their brilliant hues and combination of colours, they are by many called the most beautiful of flowers.

ORCHID HISTORY is comparatively recent, although the genus Ophrys was well known to the ancients, for apparently epiphytal tropical Orchids were first known and described in Europe towards the end of the 17th century, when they were all classified under the single name "Epidendrum." Apparently the first Orchid plant actually grown in Europe was a Limodorum, sent to England from the Bahamas, in 1731.

ORCHID NAMES—both for genera, species, and varieties—are generally derived from the name of some distinguished botanist, such as Brassavola from Antonio Brassavola, a Venetian botanist; or from some successful horticulturist, such as Cattleya, named from William Cattley, who first successfully grew Orchids in England, about one hundred years ago; or from some patron of horticulture, such as Miltonia, after Viscount Milton; or from some Greek or Latin word indicating a special characteristic of the particular plant or its flower, such as Phalænopsis, meaning "moth like"; and these names are universally used by horticulturists of all countries.

DARJEELING FLOWER SHOW.

THE Annual Exhibition of the Darjeeling Flower Show was held May 5th, when large crowds of visitors, both Europeans and Indians, thronged the pathways. The exhibits exceeded expectations, and a section was specially devoted to Orchids.

Messrs. Ghose, of Town-End, Darjeeling, won the First Prize with a group of interesting Orchids. This exhibit contained many fine specimens of the rare Cymbidium eburneum, with its white and scented flowers, which came in for much admiration; Cymbidium Devonianum, considered difficult to cultivate, had several pendant spikes of flowers, while others worthy of mention were Dendrobium Wardianum, D. infundibulum, Aërides Vandarum, and Cœlogyne ocellata.

A new species of Anœctochilus, hitherto not recorded from Sikkim, was also shown. The leaves of this plant are almost round in form, of brilliant emerald green, tessellated with darker green on the upper side. A specimen of it was sent to Dr. Goldschmidt's garden some years back to be identified when in flower by Dr. Schlechter, of Germany, but it failed to flower in the lifetime of Dr. Goldschmidt, and remains still unidentified.

CHELSEA SHOW: PART OF THE FINE GROUP STAGED BY MESSRS. J. AND A. MCBEAN.

THE SHERWOOD CUP.—It is particularly gratifying to note that the handsome Sherwood Cup, which is awarded annually to the finest exhibit in the whole of the vast Chelsea Show, has again been won by a group of Orchids. In 1923 it was awarded to Messrs. Charlesworth & Co., and this year to Messrs. J. & A. McBean, whose plants were particularly well staged, each specimen standing in its allotted space as a meritorious example of excellent quality and fine cultivation.

THE CHELSEA SHOW.

THE famous Chelsea Show was held in the spacious grounds of Chelsea Hospital on May 27th, 28th, and 29th, when fine weather favoured the occasion, and allowed vast crowds of visitors to enjoy the many attractive sights. Although Orchids were not quite so numerous as last year, due on one account to the sad loss of Mr. Pantia Ralli, the general quality was well up to the usual high standard seen at the R.H.S. Exhibitions. One of the smaller tents was reserved for Orchids, but the effect was spoiled by insufficient space, and it was impossible to secure adequate views of the groups. In future years it will be to the benefit of both exhibitors and visitors if the Orchid groups are arranged along the side of one of the largest tents.

Members of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, G. F. Moore, H. G. Alexander, H. H. Smith, F. K. Sander, Richard G. Thwaites, Chas. H. Curtis, W. H. Hatcher, A. Dye, Stuart H. Low, H. T. Pitt, Clive Cookson, J. Cypher, J. E. Shill, John Cowan, S. W. Flory, A. McBean, T. Armstrong, J. Wilson Potter, and E. R. Ashton.

FIRST-CLASS CERTIFICATES.

Odontoglossum Monarch (Aglaon × majesticum); from Messrs. Cowan & Co. A handsome hybrid with a spike of six immense flowers, white, tinted with rose on the inner halves of the segments, and effectively marked with bright reddish blotching.

Odontoglossum crispum Evansiæ; from Mr. John Evans, Colwyn Bay, N. Wales. A charming variety of highest quality. The spike bore nine large flowers, all the segments unusually well developed, of thick creamy-white substance, and with an occasional spot of colour on the labellum.

AWARDS OF MERIT.

Odontoglossum crispum Harvest Moon; from H. T. Pitt, Esq., Stamford Hill, London, N. A very pleasing variety, in which the spike carried six large flowers, the sepals and petals very broadly developed and prettily fringed at the margin.

Odontioda Iduna (Oda. Chanticler × Odm. illustrissimum); from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). A richly coloured hybrid, the spike carried six flowers of medium size, segments roundly formed, of reddish scarlet colour.

Cattleya Tityus var. Queen Marie; from Messrs. Cowan & Co. The two large flowers borne by this elegant hybrid were of a pleasing blush-rose colour, the well-developed labellum deep purple in front and with an orange-gold throat.

Cymbidium Ceres var. Empire; from Messrs. Sanders. A grand plant which bore a tall erect spike of eight large flowers, in colour crimson-rose, prettily tinged with red.

Læliocattleya Domos majestica (C. Mossiæ × Lc. Dominiana); from Messrs. Cowan & Co. An attractive flower of fine quality. Of rosy-mauve colour, the expansive labellum prettily mottled with darker colour.

Odontoglossum Felix (parentage unrecorded); from Messrs. Stuart Low & Co. This handsome hybrid carried a tall spike of ten large flowers, cream tinted, the sepals bearing a solid purplish blotch, the petals brightly spotted with rose-purple.

Odontioda Dovere (Oda. Diana × Odm. illustrissimum); from Messrs. J. & A. McBean. A charming result, in which the arching spike bore 13 flowers, the inner area of each segment bright red, the outer zone deep mauve.

Oncidium Papilio var. Atlas; from Messrs. Charlesworth & Co. One of the finest forms yet seen of this attractive species, the flower being above the usual size and richly coloured with golden-yellow and chestnut-red.

Groups.

Messrs. J. & A. McBean were awarded the Sherwood Cup for the finest exhibit in the whole Show, as well as a Gold Medal. Their group was an object lesson in effective staging, each plant showing to its best, and the whole forming a beautiful arrangement of coloured and pure-white Orchids. The centre piece was a specimen plant of Cymbidium Lowianum concolor, around which were many forms of the pure-white Odontoglossum crispum, O. crispum xanthotes, and white Cattleyas. Close by were selections of scarlet Odontiodas and closely allied hybrids. Mention may be made of Oda. Cilleham var. Ada Evans, with five bronze-red flowers, of Oda. Dovere, which secured an Award of Merit, of Oda. Joiceyi var. splendens, one of the finest, and of Oda. Radiant var. majestic, with large flowers of solid red colour, and to which a F.C.C. was given last Chelsea Show. Odontoglossum crispum Pearl McBean and O. crispum Priscilla represented two magnificent varieties, and to which awards will no doubt be given when shown with full spikes. Læliocattleyas were seen in Caroline, with flowers of soft terra-cotta colour, in Dominiana, of rich purple, and in Sibyl, of golden-yellow. Along the back rows were specimens of Oncidium superbiens and On. McBeanianum, while in other places were finely-flowered plants of Miltonia vexillaria and its hybrids. Vanda tricolor and Bletia Shepherdii were also admired.

Messrs. Charlesworth & Co. were awarded a Gold Medal for an extensive group, in which the principal feature was a number of their new Odontonias, varying much in the degree of colour. The central area was filled with Odontoglossum Wilckeanum aureum, and a few plants of

Læliocattleyas Fascinator, the combination of yellow and soft rose-purple proving very pleasing. Among the Brassavola hybrids were fine examples of Bc. Apollo, Bc. Pallas, and Blc. Jupiter, while Cattleyas were well staged in Tityus and various albino forms. Attractive points were made by grouping flowering examples of Vanda teres, as well as by finely-flowered plants of Oncidium macranthum. Miltonias of the vexillaria section were strongly represented by Bleuana, Wm. Pitt and Beau Brummel, and Cypripediums by the popular Maudiæ and callosum Sanderæ. Cymbidium Landrail var. citrinum stood out boldly, and along the front row were vigorous examples of Chysis Limminghei and Trichopilla coccinea. Odontoglossums, both species and hybrids, were unusually fine.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), was awarded a Gold Medal for a splendid collection of rare species and attractive hybrids. In the centre were finely grown Odontiodas intermixed with white Miltonias, while alongside were selected varieties of Miltonia vexillaria and its hybrids. Dendrobiums were represented by Victoria Regina and the white Dearei, as well as by promising hybrids. Dendrobium Gatton Sunray was strongly staged in numerous examples, the large flowers of straw-yellow colour coming in for much praise. Odontoglossum Wilckeanum Colmanii, with golden-yellow flowers, and O. Gatton Gem, stood out prominently, while even more so was a grand plant of Brassocattleya Gatton Lily, with large white flowers. Interesting plants were seen in Cattleya intermedia Aquinii and in a seedling of Odontoglossum crispum var. Lady Jane, in both of which flowers the petals were similary marked to the labellum. Many rare species attracted attention, among them being Eria ornata, Lycaste locusta and Cœlogyne Balfouriana, while mention may also be made of a finely flowered plant of Sarcopodium Lyonii, and of interesting Masdevallias. Awarded Cain Cup for best Amateur's Group.

Messrs. Sanders received a Silver Cup for a meritorious group mainly composed of elegant Cymbidium hybrids. Among the best were Ceres var. Empire, which secured an Award of Merit, Victrix, Pauwelsii var. Gaiety and brugense var. Rose Queen, the latter of soft rose tints. Læliocattleyas were well represented by Erica Sander (Lc. Isabel Sander × C. Lueddemanniana), luminosa aurea, and Isabel Sander var. Glory. Odontoglossums included Everest and Magpie, both attractive flowers, and O. crispum var. New Zealand, heavily blotched. Miltonias looked well in vexillaria var. Titanic, and Brassocattleyas in Enchantress var. Everest. A pretty hybrid of deep mauve colour was staged in Odontonia Pierre Cholet.

Messrs. Stuart Low and Co. received a Silver-gilt Flora Medal for an extensive exhibit containing the elegant Odontoglossum Felix, to which an Award of Merit was given, Cattleya Suavior var. Gracy, in which the petals are heavily flushed with purple, fine forms of Tityus, and a large number of

Læliocattleyas, such as Aphrodite and Fascinator. The centre of attraction was Cattleya Mendelii var. Stuart Low, with three finely developed pure-white flowers, while on either side were superb Odontiodas, including, Evangeline, in which the segments had a wide margin of rosy-mauve colour. Odontoglossum Princess Yolande carried flowers of rich purple colour, and Dendrobium dixanthum bore a number of clear yellow blooms. A novelty was seen in Blc. Saundersii (L. tenebrosa × Bl. Digbyano-purpurata). Disa luna and Vanda Parishii were both well-flowered. A number of Cymbidiums and choice varieties of the popular hybrids were also included.

H. T. Pitt, Esq., Rosslyn, Stamford Hill, London (gr. Mr. Thurgood), was awarded a Silver-gilt Flora Medal for an excellent collection of species and hybrids. The former included a finely-grown plant of Nanodes Medusæ, Anguloa Clowesii, with several attractive flowers, also A. brevilabris, Sarcopodium Lyonii, with three many-flowered spikes of rose tinted flowers, Cypripedium Curtisii Sanderæ and the elegant C. Rothschildianum. Odontoglossum crispum was at its best in the variety Harvest Moon, a First-class Certificate being awarded, and an old-time favourite was staged in O. crispum Sanderæ. Excellent hybrids were staged in Odontioda Duchess of York (F.C.C., 1923), Miltonia Venus var. Fascinator, and in a richly coloured Vuylstekeara named Memoria Joseph Charlesworth.

Messrs Cowan & Co. secured a Silver-gilt Flora Medal for a choice selection of leading hybrids, including several examples of their large flowering Brassolæliocattleya Jupiter, and Cattleya Tityus. Læliocattleyas came in for praise, and included Domos, a promising hybrid, Aphrodite, of good form and colour, and well-flowered examples of Lc. G. S. Ball with flowers of orange-yellow colour. At one end was a group of Cypripedium Gowerianum, unusually well coloured, and at the other end a collection of albinos which comprised Cypripedium callosum Sanderæ, Maudiæ, Lawrenceanum, Hyeanum, Gowerianum Gratrixiæ and Curtisii Sanderæ, forming an interesting lesson in perpetuating albino qualities. Odontoglossums were well staged, and included Monarch, to which a First-class Certificate was given, and Amazon (crispum × mirum). Miltonia vexillaria bore several many-flowered spikes, as also did Dendrobium atroviolaceum and several choice Cymbidiums.

Messrs Cypher & Sons received a Silver-gilt Flora Medal for a large group of various Orchids. Cattleyas were staged in Mendelii, Mossiæ, as well as in the hybrids Adula, of bronze-red, and Dusseldorfei Undine, with pure-white flowers. Læliocattleyas stood out prominently in Canhamiana, while the central plant was a fine example of Lc. Aphrodite with six well-developed flowers. Cypripedium Rothschildianum was much admired, as also were several examples of Cyp. Maudiæ and selected varieties of Miltonia vexillaria. Epidendrum gattonense made attractive points of

colour, and various Masdevallias along the front row came in for appreciation. Among the Odontoglossums were several blotched varieties, while Brassavola hybrids were best seen in Blc. Triune and Bc. Digbyano-Mossiæ.

J. J. Joicey, Esq., The Hill, Witley, Surrey (gr. Mr. Mackay) was awarded a Silver-gilt Banksian Medal for a splendid group of choice Orchids in which Odontoglossum crispum Joiceyi was in the centre. This fine variety carried six large white flowers, the edge of the segments prettily toothed, and the lip bordered with reddish purple markings. Cypripedium callosum Sanderæ and other members of the genus were in fine form, while special mention is deserved by two finely cultivated examples of Selenipedium Dominianum, with long-tailed petals. Brassocattleya St. Andre and Blc. Caligula were both finely shown, as also was a strong plant of Anguloa Clowesii. A charming white flower was seen in Cattleya Mary Sander, and Miltonias of the vexillaria section having blotched lips were in prominent positions. A feature of this group was the inclusion of Epidendrum prismatocarpum, always attractive when well cultivated.

Messrs Mansell & Hatcher obtained a Silver-gilt Banksian Medal for an attractive exhibit containing some grand plants of Læliocattleya Fascinator, one had as many as seven flowers on the spike, while several bore as many as five. Læliocattleya Argosy was also good. Miltonia Venus and M. Bleuana were well staged, while M. Bleuana var. lackensis carried five spikes of bloom. A novelty was seen in Odontoglossom Lenore (Ossulstonii × Lambeauianum), and Odontiodas were well represented.

Mr. Harry Dixon was awarded a Silver Flora Medal for a pleasing exhibit containing several richly-coloured forms of Odontioda Charlesworthii, selected varieties of Cattleya Mossiæ, and a nice form of Læliocattleya Britannia. Cypripedium callosum Sanderæ and C. Maudiæ carried several well-developed flowers, while at each end was a finely grown example of Miltonia vexillaria. Lælia tenebrosa and Maxillaria tenuifolia were also staged, and two special attractions were Læliocattleya Sunbeam, of apricot-yellow colour, and Odontoglossum crispum, with a spike of 15 flowers, round, and yellow in colour.

J. J. Bolton Esq., Claygate, Surrey (gr. Mr. S. Lyne) received a Silver Banksian Medal for a select group of choice Odontoglossums and Odontiodas. The former included O. crispum var. Renown, well above the usual standard, O. eximium var. Leonara, with reddish blotching, O. eximillus, with a fine spike, while the Odontiodas were best represented by Coronation, with prettily designed flowers. All the plants were in a fine state of cultivation.

R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr.W. Sorrell), exhibited Odontoglossum Belenus (amabile × Olympia), with a spike of seven large and handsome flowers of the amabile type.

ROYAL HORTICULTURAL SOCIETY.

June 11th, 1924.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart (in the chair), Messrs Gurney Wilson (Secretary), Jas. O'Brien, Stuart H. Low, John Cowan, C. H. Curtis, H. G. Alexander, Fred. K. Sander, H. T. Pitt, S. W. Flory, H. H. Smith, and Fredk. J. Hanbury.

Awards of Merit.

Cypripedium Godefroyæ leucochilum var. Edward Marshall, from Messrs Sanders, St. Albans. One of the best forms of this elegant species; the broadly-shaped segments of wax-like texture are marked with dark maroon-purple, except the labellum, which is cream-white.

Odontioda Laura, Gerrish's variety (Brewii × Coronation), from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. Sorrell). A handsome hybrid bearing a spike of eleven medium-sized flowers, sepals and petals deep crimson-red, the broad labellum rose-purple.

Groups.

Messrs. Sanders were awarded a Silver Banksian Medal for an artistically arranged exhibit containing several well-flowered examples of Thunia Marshalliæ along the back row, while in front were the curious Catasetum cernuum, with greenish flowers, Phaius assamicus and P. Wallichii, the attractive Cypripedium Curtisii Sanderæ, Selenipedium grande, and Miltonia Sanderæ var. Cameo. Læliocattleyas were well represented in J. F. Birkbeck and Isobel Sander.

Messrs. Cowan & Co. received a Silver Banksian Medal for a group of handsome Cattleyas and hybrids. There were four excellent examples of Brassolæliocattleya Jupiter, and others of Lc. Aphrodite and Lc. Canhamiana. Odontioda *Z*ena bore a spike of very pretty flowers, while Oda. Diana and Oda. Madeline were also attractive. In the centre was Miltonia Bleuana var. Queen Elizabeth, with richly-coloured petals, and on either side other good forms of this well-known hybrid. Cypripedium Maudiæ and C. Gowerianum giganteum were seen in vigorous plants.

Messrs. Stuart Low & Co. were awarded a Bronze Banksian Medal for an exhibit comprising Læliocattleya Aphrodite, with purple-flushed petals, Lc. Britannia alba, with a spike of four large flowers, a strong plant of Brassia verrucosa, the attractive Dendrobium thyrsiflorum and Phalænopsis Lueddemanniana.

Messrs. Charlesworth & Co. exhibited Odontonia Charlesworthii var. Rex, with an erect spike of five flowers partaking much of the Odm. Uro-Skinneri habit, sepals and petals spotted with crimson-red, labellum with rose-purple mottling. Also Miltonia Regina (vexillaria var. Lyoth × Isabel Sander), of deep rose colour, the labellum having a dark crimson mask.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Milo	C. Gaskelliana × Bc. heatonensis	Stuart Low.
Brassolælia Saundersii	L. tenebrosa × Bl. Digbyano-purpurata ...	,,
Brassolæliocattleya Ceres	Bc. heatonensis × L. Iona	,,
Cypripedium Mildred	bourtonense × Christopher	,,
Dendrobium Mary Cane	Royal Sovereign × Eurydalus	Sir J. Colman.
Læliocattleya Alfred	C. Enid × Lc. Mrs. J. J. Holden	Stuart Low.
Læliocattleya Erica Sander	Lc. Isabel Sander × C. Lueddemanniana...	Sanders.
Læliocattleya Freda	C. Mossiæ × Lc. Germania	Sir G. Holford.
Læliocattleya Wilfred Frost	St. Alban × Martinetii	Sanders.
Odontioda Helena	C. Nœzliana × Odm. Dusky Monarch ...	Charlesworth.
Odontioda Iduna	Oda. Chanticler × Odm. illustrissimum ...	R. Gerrish.
Odontioda Modasa	Odm. Pescatorei × Oda. Joan	Charlesworth.
Odontioda Rhoda	Oda. Charlesworthii × Odm. Aglaon ...	,,
Odontioda Sylvana	Oda. Chanticler × Odm. amabile	,,
Odontioda Vivian	Odm. Harryanum × Oda. Zenobia ...	,,
Odontoglossum Emily	warnhamense × illustrissimum	Mansell & Hatcher.
Odontoglossum Evana	Penelope × Gorizia	Charlesworth.
Odontoglossum Harmony	Dora × Mars	Armstrong & Brown.
Odontoglossum Italia...	Gorizia × Aquitania	Charlesworth.
Odontoglossum Lenore	Ossulstonii × Lambeauianum	Mansell & Hatcher.
Odontoglossum Monarch	Aglaon × majesticum	Cowan.
Odontoglossum Promuria	promerens × Vulturia	Philip Smith.
Odontoglossum Talana	eximium × Mirabeau	McBean.
Miltonia Regina	vexillaria × Isabel Sander	Charlesworth.

CORRECTION.—Brassolæliocattleya The Globe, p. 183, should read Brassocattleya The Globe.

THE ORCHID CLUB.

THE first annual meeting of the Orchid Club was held at Manchester, June 6th, when sympathetic reference was made to the loss which the club had sustained by the death of Mr. Fred Hardy, the first President.

PREMIER DIPLOMA.

Odontoglossum crispum var. Diana, from Dr. Craven Moore. One of the finest of the imported crispums. Flower 4½ inches across the petals, which are deeply serrated; the plant carried a spike of six flowers, wholly white, except for a yellow flush on the centre of the lip.

Cypripedium bellatulum, Exhims var., from F. T. Paul, Esq., F.R.C.S., Caldy. An exceedingly fine and dark coloured form; the plant bore a twin-flowered spike; the blooms, which measured three inches across the petals, creamy-white, thickly spotted with rich crimson, the spots on the broad petals being so thickly set as to give an impression of solid colour.

GROUPS.

J. H. Walker, Esq., Eccles (gr. Mr. G. Weaver), staged a fine group consisting of 75 well-flowered and artistically arranged Miltonias of the vexillaria section. In the centre were several examples of Odontoglossum crispum with full spikes.

Dr. Craven Moore (gr. Mr. C. Branch) exhibited a small group of Odontoglossums and Odontiodas of exquisite quality.

Sir William Thom, Blackburn (gr. Mr. R. Williams), showed a small

group of Odontoglossums, including Philomel, Mrs. W. Thom and Red Monarch.

F. T. Paul, Esq., Caldy, staged a small group of exceedingly well grown and flowered Cypripediums of the bellatulum section, including Godefroyæ seedlings.

Dr. R. N. Hartley, Pemberton, staged a fine example of the scarce Dendrobium Dearei.

B. J. Beckton, Esq., Irlams-o'-th'-Height (gr. Mr. W. A. Stewart), showed Dendrobium asperifolium, Oncidium Harrisonianum, and the beautiful Masdevallia Chamberlainiana.

MANCHESTER ORCHID SOCIETY.

(*Continued from page* 192.)

Awards of Merit.

ODONTOGLOSSUM eximium var. Avellon; O. Rosina var. Mars and Blc. Lady Rachel albens; all from S. Gratrix, Esq.

Odontoglossum crispum var. Mrs. Shaw; from Jas. Wood, Esq.

Award of Appreciation, First-class.

Odontoglossum Rosalind (parentage unknown); from S. Gratrix, Esq.

Cultural Certificates.

Mr. J. Howes, for Odontoglossum St. Nicholas var. perfection, and Odontioda Orion.

Groups.

A Gold Medal was awarded to S. Gratrix, Esq., a Silver Medal to A. Hanmer, Esq, and a Large Silver Medal to Messrs. Cypher & Sons. J. McCartney, Esq., staged Blc. Rumania and Dendrobium arachnites, while Mr. D. McLeod exhibited Odontoglossums.

May 23rd, 1924.

Members of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, J. Evans, W. Giles, Capt. W. Horridge, J. Howes, A. Keeling, E. W. Thompson, and H. Arthur (Secretary).

First-class Certificates.

Odontoglossum crispum var. The Chairman; from P. Smith, Esq. One of the finest of the white forms yet seen, petals broad and fimbriated, lip large with yellow crest.

Odontoglossum eximium var. Red Admiral; from P. Smith, Esq. A beautiful flower, segments of chocolate-red, tipped with white, large flat lip having a white base.

Odontoglossum crispum var. Duchess of York; from Mrs. Gratrix. A round, white flower, petals broad and fimbriated, lip large and flat.

Brassolæliocattleya Jupiter majestica; from S. Gratrix, Esq. A magnificent flower, labellum broadly developed, deep crimson, and with a yellow throat.

AWARDS OF MERIT.

Odontoglossum crispum var. May Blossom, O. crispum var. Princess, O. Aglaon, Orchidhurst var., and Odontioda Royal Purple; all from S. Gratrix, Esq.

Odontoglossum crispum var. Eros; from Mrs. Gratrix.

Miltonia Hyeana var. Duke of York; from Mrs. Bruce and Miss Wrigley.

AWARD OF APPRECIATION—FIRST-CLASS.

Odontoglossum crispum var. Earl of Chester; from Mrs. Gratrix.

GROUPS.

S. Gratrix, Esq. (gr. Mr. J. Howes), was awarded a Gold Medal for a group of Odontoglossums in variety, and Oncidium Marshallianum.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged a fine group of Miltonias, to which a Silver Medal was awarded.

A. Hanmer, Esq., Buxton (gr. Mr. G. Giles), received a Silver Medal for an attractive display of Odontoglossums and Odontiodas.

P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), staged Odontoglossum Collinge var. The Baroness, to which a F.C.C. had previously been awarded.

Mr. D. McLeod, Chorlton-cum-Hardy, staged various Odontoglossums.

Mr. J. Evans, Colwyn Bay, exhibited Miltonia Charlesworthii var. Evansiæ, a well-flowered plant.

DIACRIUM BICORNUTUM.—This Orchid has frequently proved disappointing, a circumstance partly due, we have no doubt, to the difficulty of importing it in sound condition. Its hollow stems are inhabited by small ants, which find ingress through a cleft at the base that invaribly occurs in the new growths under cultivation, and probably also in a wild state; they are prone to decay from within, and frequently crack during transmission, and in however small a degree they may be so affected, the plants never get well established in the glass houses of this country, and die in the course of two or three years after importation. With thoroughly sound plants the case is more hopeful; teak baskets are usually preferred, and as they require but a small quantity of compost, a good drainage can always be secured. The compost should consist of the usual proportions of sphagnum and fibrous peat, with which many cultivators mix some pieces of charcoal. The habitat of the species indicates a high temperature and moist atmosphere, and these conditions are therefore necessary, especially while the plant is growing.—*Veitch's Manual of Orchidaceous Plants.*

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To face p. 224.

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Edited by GURNEY WILSON, F.L.S.

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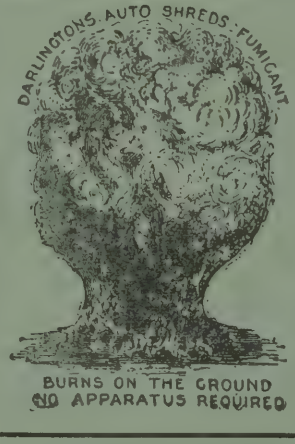

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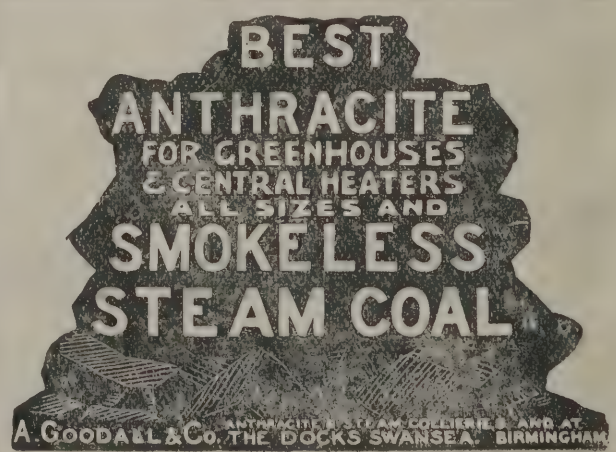

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To face p. 225.

THE ORCHID REVIEW.

VOL. XXXII.] AUGUST, 1924. [No. 374.

NOTES.

HYBRIDS OF CATTLEYA BOWRINGIANA.—In the June issue of the *Orchid Review* I note the description of Epidendrum Hanburyi, which corresponds exactly with a species from Cuba identified for me as E. plicatum. I secured a hybrid with its pollen on Cattleya Bowringiana. I make tinted photographs of all my hybrids, and this is the nineteenth hybrid of C. Bowringiana so recorded. The hybrid between C. Bowringiana and Epidendrum advena (Godseffianum) is more different from this than one would expect from the Epidendrum parent.—*Theodore L. Mead, Oviedo, Florida, U.S.A.*

SANDERS' LIST OF ORCHID HYBRIDS.—Apart from the invaluable records contained in Sanders' List of Orchid Hybrids, the recently published Triennial Supplement affords an opportunity of estimating the amount of work that has been accomplished in hybridising Orchids during recent years. During the period 1921, 1922 and 1923 about a thousand new crosses have flowered and been recorded. The genus Cypripedium heads the list with at least 220, Odontoglossum comes next with 149, followed by Cattleya with 142, and Odontioda with 125. Brassocattleyas have been increased by 68 new hybrids, Brassolæliocattleyas and Cymbidiums each by 57, Sophrolælias by 51, and Odontonias by 33.

BRITISH DACTYLORCHIDS.—At the meeting of the Linnean Society held at Burlington House, London, June 5th, 1924, Mr. T. A. Dymes showed a series of lantern slides illustrating the seed of Orchis latifolia. In a previous communication (*Orchid Review*, xxxi, p. 229), he stated that the seeds of the British Dactylorchids fell into two groups: (1) Maculatæ, and (2) Latifoliæ. The question of O. latifolia, L. in Britain had to be left in abeyance, because all the material that had been examined appeared to be of hybrid or mongrel origin, and always a blend of both groups. Further research has revealed a form, agreeing in other respects with latifolia, L., whose seeds

are obviously pure. They belong to group (2) Latifoliæ, and are very like those of O. prætermissa, Druce, but somewhat shorter and broader and inclined to taper and curve in the apical half. The kernel, as in other forms, is remarkably constant, both in shape and measurements, and it, too, is shorter and broader than in O. prætermissa; the mesh is smaller. The evidence of the seeds of these plants, which came from Winchester and Chippenham Fen, suggests that O. latifolia, L. and O. prætermissa, Druce, are close allies or forms of the same species. It would also seem that some of the hybrids are hardly to be distinguished in the field from O. latifolia, L., but that their seeds betray the strain of the Maculatæ by the spirals or lines of thickening on the walls of the cells of the testa.

SIR HARRY J. VEITCH.—Horticulturists throughout the world will greatly regret the loss of Sir Harry J. Veitch, V.M.H., whose death occurred on July 6th, at his country home, East Burnham Park, Slough. He was born at Exeter, on June 29th, 1840, and entered his father's business at the age of eighteen, carrying on the high reputation that had for many years been associated with it, and only relinquishing his horticultural labour in 1914 when the advanced years of his life induced him to take things more easily. As a full account of the history of James Veitch & Sons has already been given in the *Orchid Review* (vols xx., p. 41 and xxi., p. 336) a repetition of this firm's many activities is unnecessary. At the great International Horticultural Exhibition of 1912 Sir Harry took a prominent part, and it was on that occasion that the honour of a knighthood was conferred upon him by his Majesty King George. Few horticulturists knew Sir Harry more intimately than the late Sir Trevor Lawrence, and we cannot do better than quote the letter he wrote to *The Times* on May 29th, 1912:—"I should be glad if you would allow me, as President of the Royal Horticultural Society since 1884, to offer to Sir Harry Veitch, on behalf of the garden lovers of the Kingdom, our warm congratulations on the honour conferred upon him. Wherever gardens are valued—and where in Great and Greater Britian are they not?—the name of Harry Veitch stands in the very first rank of those we honour and esteem. This is so, not only on account of his never-tiring labours to promote horticulture, but in recognition of his and his firm's strict adherence to the best traditions of commercial dealing, of his personal qualities, and of his energy, enterprise, and success in every branch of horticulture and in the introduction of valuable trees, shrubs, and plants for the embellishment of woods and gardens. There is not, moreover, a poor member of the garden world who is not grateful for Sir Harry's unremitting labours on behalf of garden charities—nor is there a gardener in the Empire who will not wish him long years to enjoy an honour so worthily bestowed."

VANDA ROXBURGHII, YELLOW FLOWERING VARIETY.

By B. N. Ghose, Rajshahi, India.

LAST November I went out to collect a few Vanda Roxburghii in the neighbourhood of Calcutta. As these grow in great abundance on mango trees I thought it would be only a matter of visiting the locality and stripping off a number of plants from any mango tree and filling up my basket, but to my great surprise I found it otherwise. It was indeed a difficult matter to obtain really healthy and well-developed plants with good foliage and erect stems. In most of the plants the parent stems had no top leaves, but were surrounded by several lateral shoots, and the whole, on account of its great weight, was growing in an inclined or inverted position. Younger plants, however, were usually erect, but when about ten or twelve inches high they somehow lost their top leaves. In consequence, young shoots sprang up from the base of the parent stem and produced an abundance of large fleshy shoots, which clung over the rough bark and crevices of the mango trees. Although these are epiphytes, and draw no nourishment from the host, the people of the locality tenaciously believe that they do deprive the trees at least of their fruiting qualities, if not of their nourishment. They call this Orchid "Banda," from which scientists have borrowed its generic name "Vanda." The Aurvedic doctors call it "Rasna," and ascribe to it great medicinal qualities; they manufacture many efficacious medicines from the roots of this Orchid.

How the parent stem loses its leaves at the apex and ceases to grow is still a mystery to me. Is it due to devastation by insects? If so, how do the younger plants escape destruction? Is it due to a rotting effect brought about by accumulated water in the apex of the tender leaf? Or is it due to this water acting as a lens and burning the young leaves when the sun shines brightly after a shower of rain? The reply in every case is in the negative, for I observed a number of healthy plants without side growths on a naked tree that was dead, and where the Orchids were exposed to the fierce rays of the tropical sun. The healthy condition of these, it may be argued, was due to absence of insects, which found no shelter in a leafless tree. Whatever the case may be, I had to spend several hours before I could collect a dozen decent plants.

I chanced to come across a plant with flowers that were uniformly yellow in colour on the inside, and frosted-white on the outside. The lip, however, was quite white. Thorough examination revealed no distinction either in the leaves, stems, roots or in the habit of growth of this plant from any other Vanda Roxburghii. Nor could any difference be detected either in the shape or size of the sepals, petals or lip. The variation was only in the coloration of the individual flower. I examined a host of other plants

in flower in the neighbouring trees, but could not find another plant bearing similar flowers. I think that it is only an accident that has produced this change in the flower. I do not know if this is the same as Vanda unicolor of China.

I saw flowers of this Orchid exposed for sale in Calcutta in May and June, and again in October. From the coloration of the flowers one could distinguish a host of varieties, but botanically the flowers were the same. I thought that those flowering in October were autumn-flowering varieties. In this I was mistaken, for the few that I collected and grew in pots flowered, much to my surprise, in summer. I believe that those failing to flower in summer, from whatever cause, do flower in autumn. It would be very interesting to know if Orchids change their season of flowering under similar circumstances in England.

In this connection I am tempted to mention a very common Orchid at Messrs. G. Ghose & Co.'s place at Darjeeling, where a Cœlogyne corymbosa that usually flowers in summer was found in full bloom in November, and I was told that all efforts to make it flower at a different season had hitherto failed. The plant has not changed its character during the several years that it has been under observation.

ORCHID CHALLENGE CUP.—In addition to winning a Silver-gilt Flora Medal at the recent Chelsea Show, H. T. Pitt, Esq., of Rosslyn, Stamford Hill, was awarded the Fifty Guinea Challenge Cup offered by the trade Orchid growers for the best group by an amateur who does not employ more than three assistants in the Orchid houses. For many years past Mr. Pitt has been one of the most consistent exhibitors at the various meetings of the Royal Horticultural Society, and his groups always bear close investigation on account of the wide range of rare species that is invariably seen in them.

ORCHID CULTURE IN COLORADO, U.S.A.—At the recent Boston Orchid Show a Silver Medal was awarded to William B. Berger, Esq., Denver, Colorado, U.S.A., for superior cultivation of Orchids under difficult climatic conditions. Little more than a year ago, Mr. Berger contributed to the *Orchid Review* (vol. xxxi., page 166) some interesting details of the conditions under which the cultivation of Orchids is carried on in this locality. The extremes of temperature and the lack of humidity in the atmosphere being the principal features. As an example of the climatic conditions prevailing in summer, the weather report for June 19th was: highest temperature 94, lowest 50; humidity 8 per cent. In a recent letter, Mr. Berger says this will show you what I am up against in trying to grow Orchids here.

ODONTOGLOSSUM CRISPUM VAR. ST. GOTHARD.

OF the many beautiful species, Odontoglossum crispum enjoys widespread popularity, not only for the ease with which it can be cultivated, but also for the attractive flowers which are seen at their best during the spring months. Amateurs have always been keen to acquire varieties in which the segments are broadly developed, and this character is more sought after to-day than at any period in the plant's history. Having regard to the persistent demand for fine forms, it is not surprising to learn that several

ODONTOGLOSSUM CRISPUM VAR. ST. GOTHARD.

attempts have been made to raise from seed some of these meritorious plants. Apart from the difficulties connected with raising Odontoglossums, there is always present the fact that reversion to the normal type is a strong factor. Only on rare occasions are superior varieties produced.

Our illustration is of Odontoglossum crispum var. St. Gothard, as it flowered this past spring in the extensive collection of Harry Worsley, Esq., Stonehouse, Haslingden, Lancs. It results from the crossing of O. crispum Doinii with another fine variety, and was acquired by its present owner three years ago. The great breadth of the petals is well seen in the

photograph, hence it is only necessary to add that all the segments are of a thick fleshy texture. This speaks well for excellent cultivation, although it should be said that these good qualities must be actually in the plant before they can be made visible in the flower; no amount of cultivation will turn a bad variety into a good one. The spotting in this particular variety is not very pronounced, but it is just sufficient to make a contrast between the sepals and the petals, and to render the latter even more prominent on account of their pure-white surface. It is worthy of note that when only a few spots are present on a flower, it is the sepals that bear them; it is an extremely rare event for the petals to be the only spotted segments. This superb variety is under the care of Mr. C. Mace, who also achieves excellent results with other members of the genus. A descriptive account of the Stonehouse collection, with illustrations of some of the notable varieties, was given in our issue of November, 1923.

CATTLEYA MOSSIÆ VAR. MRS. J. T. BUTTERWORTH.—It will be of interest to readers of the ORCHID REVIEW to know of a rather remarkable variety of Cattleya Mossiæ that was exhibited by Mr. J. T. Butterworth, of Framingham, Mass., U.S.A., at the Massachusetts Horticultural Society, Boston, on June 7th, 1924. The writer has grown Orchids for about forty years, and during that time has kept in touch with outstanding varieties in the Cattleya genus. This variety of C. Mossiæ, named Mrs. J. T. Butterworth, is by far the finest he has ever seen. The good colour and extraordinary size of the flower, together with its fine substance, instantly attracts a lover of Orchids. Mr. Butterworth has now forty plants of it, all obtained by propagation from the original small piece. The plants exhibited showed the same vigorous state of health as if they had just been imported from Venezuela. The Committee were unanimous in awarding a First-class Certificate of Merit and the Society's Large Gold Medal to this special variety, which is described as a deep pink form of Mossiæ, clear colour all through, 9¼ inches from tip to tip, lip 3 inches across and deeply crisped, throat light magenta with yellow veining. In judging this flower, 95 points were given out of a possible 100.—*George F. Stewart, Waltham, Mass., U.S.A.*

BOSTON ORCHID SHOW.—The Orchids sent from the Missouri Botanical Garden to the recent Boston Show did not comprise the showy kinds, but were of special botanical interest. Thirty-seven distinct genera, representing forty-six species were selected, many of which were collected on the recent expedition into South America, and are new to the United States. Many more could have been sent, but for the fact that the space was limited to 25 square feet. A Silver Cup was awarded to this meritorious exhibit.

OBSERVATIONS OF AN ORCHID COLLECTOR IN THE TROPICS.

THE following is extracted from a paper read by Prof. Oakes Ames at a meeting of the American Orchid Society on May 9th, 1924.

"Some people regard the Orchids as a group of organisms that is surrounded by romance and mystery. It is thought that they are of a different character from other plants. Surely there is reason to see some truth in this point of view, as with Orchids almost every collector has had experiences that seem to indicate supernatural influences. In searching my records for a striking example to bring to your attention, I hit upon one that may prove of interest.

"The incidents leading up to it were simple enough. I happened to be in Rio de Janeiro in 1914, at the Botanic Garden, where I had gone to study problems connected with economic botany. In the course of events I decided to make an expedition to Mount Itatiaya, one of the loftiest mountains in Brazil. A few days before I had arrived at this decision, Albert Loefgren, who was the botanist then in charge of the Herbarium of the Garden, showed to me a book of water-colour drawings of a number of Orchids he had collected. One of these drawings represented a small white-flowered species, and, in referring to it, Loefgren remarked that he had found it many years previously, but that the original material had been lost in the mails in transit when it was sent to Prof. Cogniaux for inclusion in Martius' *Flora Brasiliensis*. This Orchid had never been seen again among collections, and the only record of the species was the water-colour drawing. Loefgren and I discussed this Orchid several times because neither of us was sure of the genus to which it belonged. On the day before I started for Mount Itatiaya I said to Loefgren, in jest, of course, that I would find another specimen for him before I returned to Rio, and I assured him that we should then be able to put an end to uncertainties as to its botanical position.

"My trip to Mount Itatiaya was through magnificent country. It was not altogether the kind of trip one would choose for unadulterated pleasure because the living conditions were primitive, the food of a kind that left much room for improvement, and the ascent of the mountain was a bit arduous and risky. Christmas day found us on the trail. Our Christmas dinner consisted of boiled chicken smothered in cassava meal and wrapped in an ancient issue of a Rio newspaper. On the return journey we came at last to a point where a great forest tree had fallen across the trail in such a manner that it impeded our progress. This tree had fallen after we had passed it two days previously on our way to Itatiaya. As I rode toward the tree I noticed on its trunk a tiny epiphytal Orchid which hung directly

over the middle of the trail. Only a casual glance was needed to show that I had found Loefgren's lost species. It was the only Orchid on the tree. Later, Loefgren decided that it was an undescribed species of Leptotes, and he dedicated it to my wife, colleague and playfellow, Blanche Ames, who was a member of the expedition.

"Surely, this incident savours of the mysterious things in life, and lends some strength to the belief that uncanny peculiarities are attributes of the Orchid family. Why should this lost Orchid have been so strangely thrust in my way? Why should the tree on which it grew have fallen just at the time it did when I was passing along the trail? We may dismiss the whole business as a strange coincidence, but in the final analysis it staggers credulity and gives some force to the view that Orhcids are mysterious creations."

NONSYMBIOTIC GERMINATION OF ORCHID SEEDS.

REFERENCE has previously been made in our pages (vol. xxx., page 135), to the experimental work of Dr. Lewis Knudson on the nonsymbiotic germination of Orchid seeds. The successful germination of seeds by the use of certain sugars was noted. These seeds were those of Cattleya, Lælia, and Epidendrum. It was suggested that germination is dependent upon a supply of organic substances.

In further observations on Nonsymbiotic Germination of Orchid Seeds, published in the *Botanical Gazette*, April, 1924, Dr. Knudson remarks that if the germinating Orchid seed is dependent on an available supply of organic matter, then the method should be applicable to Orchid seeds other than those used in the previous experiments. The results of experiments show that various other genera have been successfully germinated to the extent of practically 100 per cent.

Summary.—Dr. Knudson states that "these experiments lend further support to the hypothesis that the germination of Orchid seeds is dependent on an outside source of organic matter. The effect of sugar on germination is that of a food, but when germination has proceeded to the stage when the leaf is just appearing, then subsequent growth may occur in the absence of any available organic matter in the nutrient medium. This leads to the idea that while the embryos possess chlorophyll, the photosynthetic process does not occur, probably owing to the lack of some internal factor. While these experiments do not disprove the necessity of the fungus for germination under certain conditions, they do emphasize again the nutritional aspects of the problem. At the present time experiments are in progress on the so-called symbiotic germination, and the results thus far obtained lend support to the ideas expressed in my previous paper in respect to the function of the fungus."

GERMINATION OF ODONTOGLOSSUM AND OTHER SEED WITHOUT FUNGAL AID.

By Edward Clement.

FOR many years past the writer has been interested in the germination and raising of Orchid seed. In the very early experiments, seed was sown on finely chopped fibre, sphagnum moss, etc., enclosed in cheese-cloth and pressed tightly into small pots. Many of the seeds germinated, but, alas, owing to the invasion of pathogenic fungi, insects, etc., only a few survived to attain the plant stage. Seeds from terrestrial Orchids were sown on a pot containing a mature plant of similar species; here, too, pests were obtrusive and results uncertain. Therefore, these methods were abandoned and culture tubes brought into use. Cotton-wool in watery nutrient solution, carrot, potato, and such-like, were employed, but without avail. Meanwhile other investigators, notably Bernard, Burgeff, and Charlesworth, had come to the conclusion that in order to successfully germinate Orchid seed the presence of an appropriate fungus was necessary, its attribute being to form a symbiotic relation with the embryo. It has been inferred by certain of the above investigators that many species of Orchid seed responded in a kindly way to the overtures of the endophyte, notably the Odontoglossum genus, and forthwith ways and means were instituted to bring about this happy combination, but in this partnership the union is not without alloy; strife may arise in the effort for supremacy of survival, and careful attention is needed to keep the subtle fungus in its place and check its eager desire to become master of its more delicate mate—the embryo.

Bernard, in recording his experiments, stated that the infection of the embryo by the fungus is not without difficulties. He says: "For five years I have sown seeds of diverse species of Orchids in culture tubes, each of which contained one hundred seeds, and these I have inoculated with Rhizoctonia obtained from the roots; altogether I have obtained a few hundred seedlings, but I under-estimate when I place the number of seeds used in my experiments at 50,000. For the majority of the seeds, the association with the fungus, that I have placed in their presence, has been merely passive and without effect, or impossible or rapidly injurious to the embryo."

Granting that with a harmonious balance of the specific fungus the seed will awaken to life and progress, as stated by the above workers, one is confronted with the problem as to exactly how and in what way the endophyte contributes to this creation. Assuming that the invasion of the embryo by the fungus assists germination by virtue of the food, *i.e.*, carbohydrates, minerals, etc., it conveys to the seed germ, providing nourishment

in its early stages of growth and before the tiny corm is capable of extracting suitable nutriment from the pabulum on which it may be deposited, then, under these conditions of symbiosis, the endophyte may be *nature's way* of establishing means whereby the life of the embryo is possibly assured, Orchid seed is by nature not robust; its food content is small, and consequently not capable of combating the adverse conditions of environment it may encounter. It is conceivable that owing to the more or less insolubility of the material to which the Orchid seed is subjected generally, when distributed naturally or otherwise, and by reason of its feeble constitution, it is unable to obtain from its surroundings sufficient nutrient to maintain and replenish its own meagre food supply; in consequence, unless some natural resource comes to its aid, the embryo dies.

Admitting the beneficent virtues of the appropriate fungus by reason of its ability to furnish the seed with food, directly or indirectly, by breaking down and rendering soluble the more complex material on which it (the seed) is deposited, then, under the above conditions the fungus may be a necessity for the development of the embryo. It is, however, worthy of note that as soon as the young plant can fend for itself it appears to exercise every effort to eradicate the endophyte; later, the fungus may re-enter the roots, but it is kept within bounds and treated more or less as a parasite by the plant's own laboratory methods, possibly by the process of phagocytosis. In connection with this, the writer, in pursuing the investigation of a number of root sections obtained from healthy and vigorous Odontoglossum plants and other genera of Orchids, found the presence or absence of the endophyte within the cells very irregular, and, whether the plant was bearing flower or not, this irregularity appeared to have no influence one way or another on its health or well-being.

In reviewing the symbiotic association of the fungus with the embryo, in the light of the above hypothesis relative to conditions and surroundings, and recognising the delicate and fragile constitution of the seed, with little power of its own to dissolve or break down material in quest of food supply, the idea suggested itself to the writer that if a suitable and easily assimilated food were provided, together with genial atmospheric conditions, the seed might adapt itself to its new environment and germinate without fungal aid, for it is possible that the virtues of the fungus may lie in the direction of food preparation rather than itself being a direct nutrient.

Therefore, with the above views in mind, steps were taken to test the validity of these reasonings. Accordingly, media of varying composition were prepared on lines calculated to supply the embryo with an easily assimilated food. These were tubed and thoroughly sterilized by means of the steam sterilizer for thirty minutes on three successive days, and

eventually sown with seeds of the Odontoglossum genus which had previously been rendered aseptic. All the first experiments failed, and only after repeated trials with numerous differently composed media, extending over a period of many months, did success appear in sight. So exacting is the seed of this genus in its likes and dislikes of food elements that the slightest variation of the composition apparently most suitable is immediately noticed and marked by the embryo. Indeed, a medium suitable to the seed of one species of Odontoglossum was distinctly out of favour with seed obtained from another plant of the same genus, and a modification in such cases became necessary. Eventually a compromise may be possible, suitable to either. However, when at last a suitable medium had been obtained and the aseptic seed sown thereon, in six days following the sowing the tiny embryonic spherule was distinctly visible through the transparent integument, also chlorophyll formation had begun; moreover, a very large percentage of the seed, 90-95 per cent., had attained this condition. From now onward development progressed regularly and normally, the protocorms became a rich green colour, chlorosis being entirely absent. At twelve weeks a slight sinking in the meristematic region occurred and root-hairs at the basal end were appearing; at four months the leaf point had formed, and at eighteen weeks from the date of sowing the marked profusion of root-hairs was very conspicuous. The protocorms had now attained a diameter of 900-1000 microns, and not one had died. An examination for starch content did not reveal any excess. In any case it would appear that with leaf formation a diminution of starch in the cells takes place with or without the endophyte.

ODONTOGLOSSUM SEEDLINGS AT 18 WEEKS.

From the age of eighteen weeks progress became somewhat retarded, due perhaps to the lapse that apparently takes place just before root formation, or possibly to the lack of air, the culture tubes being comparatively small, or owing to the incubator in which the tubes were cultured being kept indoors, photo-synthesis having to some extent been prohibited by the weak light in the room. On removal of some of the tubes to stronger

light a marked improvement was apparent. At this stage the protocorms, being absolutely sterile, and with small root points appearing, were transferred to new pots, containing quite new and unused fibre compost, and conveyed to a well lighted greenhouse having a moist atmosphere with a temperature of about 70 degrees F. About 700 healthy seedlings were extracted from one tube. In view of this somewhat drastic change from medium to fibre, one would have expected some flagging of the young plants. This, however, did not occur. Growth may have continued by a temporary autonomous process pending the establishment of the roots in compost. In three to four weeks from the time of transplanting, roots had begun to penetrate the compost, and, simultaneously with their growth two, three or four leaves were formed, giving the little plantules an appearance of complete and happy contentment. It is possible that the more rapid growth of these true roots after transfer to sterilized compost was induced by the withdrawal of the highly nutrient food supply of the medium, wherefrom the copious root-hairs could easily obtain sufficient nourishment without true root aid. It may here be mentioned that no Odontoglossum or allied genus was present, nor had any previously been grown in the greenhouse referred to.

ODONTOGLOSSUM SEEDLINGS AT 8 MONTHS.

The foregoing remarks have dealt chiefly with the investigations of the aseptic germination of Odontoglossum seeds. It may, however, be of interest to give a brief account of results obtained in the culture of Dendrobium seed conducted also under complete aseptic conditions as above, but cultured on a slightly different medium in a second incubator having a temperature of about 90° F. In this instance the previously sterilised seed quickly showed signs of growth on the medium, in six to eight days. At ten weeks root hairs were developing, and at the age of four months the seedlings possessed a distinct pseudo-bulb, having two well-formed leaves and true roots 2-3 mm. in length. At this stage, and while perfectly sterile,

the young plants were transferred from the culture tubes to compost in pots. Here in a short time they established themselves, and at the age of eight months possessed a bulb over one cm. in length, while the roots measured 1-1½ cm. Not five per cent. of the plants were lost in the transfer.

Cattleyas, too, have responded kindly to the above process of culture, true roots being produced in the sterile tubes at the age of four to five months. These also grew well on being transferred to compost. The composition of the medium was modified for this genus, as in the case of the Dendrobium seed.

The experiments then reveal the fact that seeds of the Odontoglossum and allied genera, together with other epiphytes, can be successfully germinated without fungal aid. Moreover, the seedlings so obtained are apparently normal in every respect. Now the establishment of these facts appears significant, inasmuch as it proves that the various species of Orchid seed investigated have germinated without the intervention of the endophyte. Why should not others? The results suggest that, after all, environment is a potent factor.

To dispense with the fungus is a great advantage in cultivation, the tedious and difficult task of isolating and culturing the specific endophyte is avoided, also the risk of death to the embryo through an ill-balanced or modified form of the fungus is completely removed. And it is possible that in course of time successive sowings of seed obtained from parents which themselves had been raised through the early stage of life under aseptic conditions would become quite adapted to the new process, as probably in years long ago the first Orchid seeds struggling for existence against adverse conditions accepted Nature's help by forming an alliance with the fungus.

For experiments now in progress tubes and flasks with a greater air capacity have been requisitioned, and arrangements made for better access to light. Results will be noted and recorded.

Undoubtedly, photo-synthesis plays an important part in the germination of epiphytal seed. Experiments are being conducted with a view to ascertain, as far as possible, the light value best suited to the germination of certain epiphytes. A standard of actinic light, as measured by the actinometer, has been adopted, and arrangements made to subject the cultures to varying degrees above and below this standard, so far as weather conditions and the use of screens admit.

The hydrogen-ion concentration of the medium is also a factor to be considered and modified according to seed species. To describe the more obscure metabolistic processes engaged in the development of the embryo is difficult; a good deal of the inner workings of this complex and awe-inspiring process still remains Nature's secret.

SUMMARY.

1. It has been shown that a very high percentage of seed of the Odontoglossum genus, as well as that of other genera, can be germinated aseptically, and normal growth continued after transfer from the medium to pots.

2. Orchid seed obtained from different pods was found to vary considerably in vitality. If stored in paper for any length of time the embryo may become jeopardised through evaporation or drying up of the oily food contents.

3. Given a suitable medium and good fresh seed, germination quickly commences, the formation of chlorophyll is noticeable in a week or so from the date of sowing, root-hairs develop in ten to twelve weeks, and at four months are present in abundance, their length, in the case of Odontoglossums, frequently exceeding the diameter of the protocorm. From the time of sowing until the pricking-off stage no attention is required beyond the maintenance of temperature.

4. The seedlings may be removed to compost in pots at an early stage of root formation with little or no loss of life.

5. The process of photo-synthesis is an important factor in assisting the germination of epiphytes.

6. The hydrogen-ion concentration of media may require adjustment for seeds of different genera, bearing in mind that in the process of sterilisation acidity may be slightly increased.

7. Seed requires to be thoroughly sterilized, otherwise trouble may arise from the presence of spores of fungi and bacteria.

8. Seedlings are being grown on, results will be recorded.

9. Experiments are still in progress, seeds of Cymbidium have recently been included, and at six weeks from sowing possess vigorous root-hairs; at 16 weeks a strong leaf point had appeared, and root-hairs completely covered the surface of the medium.

In conclusion, the writer desires to point out that this paper has been written in no spirit of assertiveness. It is an attempt to convey the thesis that prompted the experiments and to state actual results. Later, it is hoped to give further particulars concerning the progress of young plants, already in pots, together with results of cultures in hand and those to be undertaken.

The accompanying photographs may serve to illustrate the progress of cultures and to substantiate statements.

My sincere thanks are due to Mr. Armstrong, of "Orchidhurst," Tunbridge Wells, for so generously supplying the seed, also for the keen interest he has shown in the work. His valued assistance in the pricking-off process, together with the pains he has taken in tending and housing the young plants, has been of great help. Also to Ramsbottom and Prof. Brooks I am indebted for kind encouragement received at their hands.

ORCHIDS OF THE UNITED STATES AND CANADA.

UNDER the title of "An Enumeration of the Orchids of the United States and Canada," Prof. Oakes Ames has prepared for the American Orchid Society a book which presents, for the first time, a comprehensive survey of the Orchid flora of these countries. No less than 44 genera, 146 species, and 4 hybrids are dealt with.

Except in a few cases where doubt still prevails as to what was the type of a species, and where different opinions are held as to the reliability of an author's conclusions, the rules of nomenclature sanctioned by the International Botanical Congress, held in Vienna in 1905, have been closely observed. In the Preface it is remarked that complete agreement as to generic and specific limits is still lacking among systematic botanists, and personal judgment continues to take a prominent part in the interpretation of our flora. General agreement will be felt with the author's statement that "If I have neglected proposals that call for segregation of the species of Habenaria and Spiranthes into smaller genera, I have been influenced by the belief that the evidence and trend of evolution should not be obscured or obliterated. I have been governed by the conviction that the multiplication of small genera imposes a needless burden on those who are not specialists as well as on those who use taxonomy for practical purposes."

The American Orchid Society has just reason to be proud of being able to issue in its own name a work so accurately prepared, and one that will be an enduring contribution to the literature of Orchidology. While this book has been generously prepared by Prof. Oakes Ames, its publication also has been entirely without cost to the Society, inasmuch as the actual expense of printing has been met by private contributions from the following active members: Prof. Oakes Ames, Mr. Albert C. Burrage, Mr. Louis Burk, Miss Marion C. Case, Mr. H. Walter Child, Mr. E. B. Dane, Mr. F. E. Dixon, Mrs. Mary Ames Frothingham, and Mr. Edwin S. Webster.

A copy of the book has been presented free to each member of the American Orchid Society.

It is particularly gratifying to note that the great labour involved in the preparation of this book has been appreciated, and that the large Gold Medal of the American Orchid Society has been awarded to Prof. Oakes Ames in recognition of his valued service to the Society.

CYPRIPEDIUM ARTHURIANUM.—Raised at Chelsea for Messrs. Veitch by Seden, the parents being insigne and Fairrieanum. Only a single seedling was raised, and this flowered for the first time in 1874, when Prof. Reichenbach dedicated it to the late Mr. Arthur Veitch.

ORCHIDS AT MAMARONECK, N.J., U.S.A.

IN the United States considerable attention is being given to the raising of Orchids from seed, for the embargo placed on imported plants has greatly reduced the stock of many well-known species. In the front rank of successful workers is Mr. George E. Baldwin, who maintains a large establishment at Mamaroneck, New Jersey. His success would have been even more prominent to-day, but for the fact that a short time ago more

SEED BEDS IN WHICH THE ORCHID SEEDS ARE STARTED UNDER BELL GLASSES.

than 10,000 promising seedlings perished in a disastrous fire that burnt out a house measuring 80ft. by 10ft. But great as this loss was, Mr. Baldwin set about the task of raising another batch with commendable enterprise, so that to-day it is possible to see one of the finest lots of seedlings in the United States.

Cattleya Warscewiczii, always known as C. gigas in the cut-flower trade, has been raised from seed in large batches, as also has C. Trianæ, and as fine parents have in both cases been used, it seems only reasonable to expect a high grade type of flower in the resulting progeny. Walking through the long houses, it is of interest to note a few of the kinds being grown on for future use, mainly for cut-flower purposes, but also for the production of an occasional variety of outstanding merit. Of Cattleya Enid there are about 2,000 seedlings; of C. Hardyana alba, 3,000; of C.

Pretoria (Dowiana × Peetersii) nearly 4,000; and a similar number of Brassocattleya Nestor, which should prove of considerable value in the early autumn months, for it is composed of C. Warscewiczii and C. labiata mated with Brassavola Digbyana.

As a spring-flowering Læliocattleya, the hybrid between L. purpurata and C. Mossiæ, known as Lc. Canhamiana, proves very useful, and Messrs. Baldwin have a vigorous batch of 5,000 seedlings. There are also batches of Lc. Ivanhoe, and many crosses of the reddish Sophronitis hybrids, as, for example, Slc. Meuse crossed with C. Warscewiczii.

IN THE POT TO THE RIGHT ARE SOME 100 SEEDLINGS TWO MONTHS OLD, THE ACTUAL SIZE ABOUT THAT OF A PIN HEAD. TO THE LEFT ARE ABOUT 25 TRANSPLANTED SEEDLINGS SIX MONTHS OLD.

Sophrocattleya Faboris crossed with Brassocattleya Princess Patricia should also produce some meritorious hybrids.

Among the numerous Cattleyas that have been raised from seed, a note should be made of Fabia, and its varietal form alba, the pretty Maggie Raphael alba, a nice lot of interexta alba, produced by crossing white varieties of Mossiæ and Warneri, and also a promising lot of Cattleya President Wilson, the parents in this case being labiata alba and Fabia alba.

While the system of raising seedlings under clean conditions in glass bottles is being given a fair trial, the method here employed is to sow the seed on prepared pots of compost, and to place three of these pots under the protection of a bell-glass. By this method, which is certainly a successful one, the little seedlings quickly become large enough to be pricked out into small pots, about 100 in each, and when about six months old 25 are planted in a pot.

To Miss Baldwin much credit is due for the painstaking manner

in which she handles these tiny gems of Orchid life. Mr. Harry Gray also has an important duty to perform in looking after the various needs of this large family of little ones. In fact, these seedlings grow so quickly that there would soon be no little ones left, were it not for the reason that

SEEDLINGS, EIGHT MONTHS OLD, WHICH HAVE BEEN SEPARATED AND ARE READY FOR SINGLE POTS.

successive batches of seed are continually being sown. For the early stages of these seedlings, Californian peat is used. It is kept rather on the dry side, or at least appears to be, and seems suitable, being of soft nature. Later on, the seedlings are potted in osmunda fibre.

Large batches of the useful Cattleya species are cultivated in a house measuring 125ft. by 50ft., in fact there are over 20,000 plants, and suspended from the roof nearly 3,000 plants of Oncidium splendidum. Odontoglossums and Odontiodas are also grown with no small amount of success, and at the recent Boston Show, Messrs. Geo. E. Baldwin & Co. included in their exhibit nearly a score of fine examples of these cool-growing Orchids. Dendrobiums and Cymbidiums were well represented

in the group, while over 50 various Cattleya hybrids were also included as examples of the many seedlings that are nearing the flowering age.

Læliocattleya Fascinator, obtained by crossing selected varieties of L. purpurata and C. Schrœderæ, has flowered very well during the past season, so much so that seven distinct forms were included.

Oncidium ampliatum is always worthy of attention, for it is among the species of this genus that respond well to the United States atmosphere, tall, many-flowered spikes being plentiful. Odontoglossum crispum is so well known in England that its inclusion in the groups is taken as a matter of course, but on the other side of the Atlantic its presence is looked upon as something unusual, for only during late years has any considerable amount of attention been given to the cool-growing section of this genus.

ORCHID SEEDLINGS IN THE ESTABLISHMENT OF MESSRS. GEORGE E. BALDWIN AND CO.

The illustrations accompanying this article appeared in the *Gardeners' Chronicle* (of America), April, 1924, and for their use in these pages we tender our best thanks.

ORCHID CULTURE IN THE UNITED STATES OF AMERICA.

WITHIN a few miles of Boston is the residence of Ernest B. Dane, Esq., who owns an extensive collection of Orchids which is under the special care of Mr. Donald Mackenzie. On entering the glasshouses one's attention is drawn to the fine lot of Odontoglossum citrosmum, some seventy plants in the best of good health, and placed well up to the light. This species does uncommonly well in the United States, and its flowers are much appreciated. Another old favourite is Cœlogyne cristata, as well as its pure-white variety, while many varieties of Calanthe made a brilliant display in the early months of the year. Numerous Dendrobiums are grown, and the genus Vanda is represented by vigorous plants of tricolor and suavis.

Cypripediums are a special feature, and were well shown by Mr. Dane at the recent Boston exhibition. There is a strong plant of Selenipedium Uranus, which was produced by crossing S. grande with S. Lindleyanum, also a dark form of S. grande that is well above the average type. Cypripedium Leeanum is best seen in the variety E. B. Dane, which is of yellow colour, rather an unusual thing for this hybrid. A comparative novelty is grown in C. Titania, and many Cypripediums were acquired from the collection of Mr. Gratrix during the period 1916-17. The celebrated collection of Dr. Rothwell was purchased by Mr. E. B. Dane, and it is worthy of mention that Dr. Rothwell paid 800 dollars for a plant of C. insigne Sanderæ, which was, of course, in the early days of this plant's existence.

Cypripedium Juno is always regarded as one of the best of the primary hybrids of Fairrieanum, and here it is represented by an unusually dark form. Other notable Cypripediums are Rothschildianum, in which the petals are considerably elongated, and Argus, a native of the Philippines. Cypripedium radiosum var. G. S. Ball, is apparently of free-flowering habit, and there is also cultivated a splendid form of Cyp. Lawrebel (Lawrenceanum × bellatulum). Cyp. Duchess of Connaught yields flowers of clear yellow colour, and among the many other members of this section are strong plants of insigne var. Harefield Hall, the popular Maudiæ, and Olivia, the latter a hybrid of American origin which first appeared in 1898.

Successful cultivation is specially seen in Epidendrum vitellinum, which has been over fifteen years in the collection, while another plant generally considered a difficult subject exists in Warscewiczella discolor. Many Masdevallias were flowering well at the time of the writer's visit, and Vanda cœrulea looked like producing flower spikes in due season.

Lælia anceps apparently succeeds admirably in the bright atmosphere of this locality, while other members of the genus are cultivated in acuminata, and in Lindleyana, although the latter is possibly of hybrid origin.

Cattleya citrina is rarely seen in robust condition, but here it succeeds well, and produced flowers a few months ago. Miltonia vexillaria is cultivated in a large batch of vigorous plants, and the foliage of these leads one to believe that their cultural needs are fully understood by Mr. Mackenzie.

The genus Phalænopsis is strongly represented, the various plants being cultivated in receptacles that are suspended from an iron frame-like stand. Excellent flowering results are obtained from P. Schilleriana, Lueddemanniana and Esmeralda. Growing in the same house is a batch of Dendrobium Phalænopsis, the moist and high temperature being emminently suitable to the growth of both this species and the genus Phalænopsis. Angræcum sesquipedale is a stately plant, and a very interesting one also when in flower.

Cymbidiums are cultivated on a central staging, and there is also an extensive collection of Læliocattleyas, embracing most of the popular kinds. Læliocattleya E. B. Dane (Lc. Martinetii × C. labiata), stands out prominently on account of the rich coloration of its expansive labellum. Cattleya Warscewiczii is grown well, the many fine plants yielding large flowers during the summer period. Brassia Lawrenceana and the pretty Renanthera Imschootiana are both worthy of mention, while another praiseworthy item of cultivation exists in a number of healthy plants of Oncidium splendidum, suspended in a row from the rafters.

In the Odontoglossum house the favourite O. crispum is grown, also various Odontiodas, including the hybrid known as Oda. Gladys, which recently carried a very fine spike of flowers. Among other interesting plants are strong examples of Maxillaria grandiflora, M. variabilis, a native of Mexico, and several Epidendrums of the radicans section.

Messrs. Lager & Hurrell.

A large and varied collection of Orchids is cultivated by Messrs. Lager and Hurrell, Summit, New Jersey, U.S.A., and many noteworthy plants can be picked out for individual description. This establishment contains a collection of Lælia anceps that is one of the largest, and probably the finest, of its kind in the United States. The white forms are particularly numerous, and, along with the coloured kinds, yield an abundant supply of bloom about the month of January, a period when flowers are much in demand and when remunerative prices are realised. Lælia Gouldiana is also grown for the cut-flower trade at Xmas time and early in the New Year.

Cattleyas are cultivated in large quantities. In past years many fine imported plants have been received. As an example, a plant of C. Warscewiczii sold to Mr. Clement Moore produced no less than thirty-three flowers, although it was then in a teak-wood basket measuring no more than seven inches along each side. Mention may also be made of C.

Warscewiczii alba, which Messrs. Lager and Hurrell flowered and exhibited at the Boston Show of 1910. Another fine variety of this species is named rochellensis, also white, except for the faintest tinge of colour on the labellum. From the middle of July to the beginning of October is a most difficult time for supplying Cattleya flowers. C. Eldorado was given a fair trial, but its constitution proved unsatisfactory, and now resource is being given to hybrids.

Vanda teres is placed outside in the full sun during the best of summer months, and this method seems to be necessary for the proper ripening of its terete stems. An attractive plant exists in a strong example of Vanda Parishii Marriottiana, and another old-time favourite in Batemannia Wallisii; both of these species were flowering well at the time of taking these notes in the month of May. Cœlogyne sparsa and C. barbata may also be included among the species less seen than they deserve, while Dendrobium Bronckhartii also merits more general cultivation. Tens of thousands of plants can here be seen, not only species, but a wide range of all the popular hybrids. It remains to be said that Mr. Lager has had an extensive experience in Orchid collecting, some details of which he gave before members of the American Orchid Society on the occasion of the last great show at Boston.

Mr. Hurrell first became acquainted with Orchids as far back as 1872, and settled in the United States thirty-five years ago.

MR. JOSEPH MANDA.

A visit of interest was that paid by the writer to Mr. Joseph Manda, who has since been to England in search of suitable plants for increasing the stock of Orchids in his large nursery at West Orange, New Jersey, U.S.A. In his early days, from the year 1885, Mr. J. Manda had charge of the Orchid collection belonging to Messrs. Pitcher & Manda, and it was while with them that he raised Cypripedium Arnoldianum (concolor × superbiens), said to be the first hybrid Orchid raised in the United States, and which flowered in 1890. Two or three years later, Mr. Manda was fortunate in getting the then very rare Cypripedium Fairrieanum to flower, and by dividing the pollen into four, he was able to raise C. Edwardii, Constableanum, Niobe, and Arthurianum. Subsequently he produced Cypripedium Henry Graves, and some twenty-five other hybrids in the same genus. It was also when with Messrs. Pitcher and Manda, that Mr. J. Manda had to deal with an immense importation of Cattleya Trianæ, consisting of 515 cases. Among the many plants contained therein was one which produced pure-white flowers of considerable beauty. It consisted of eighty-nine bulbs and eleven leads, and was disposed of to Mr. C. G. Rœbling, of Trenton, New Jersey, for the sum of 2,000 dollars. In more recent times, Mr. Joseph Manda purchased the well-known

Kimball collection, and also the Cattleyas belonging to Mr. John Crosby Brown. One of the largest houses is now filled with Cymbidium hybrids; there are no less than 64 different varieties, and this is believed to be the best collection of the genus in the United States. Cymbidium cyperifolium may be mentioned as one of the rare species cultivated. Another variety is to be seen in Lælia purpurata Mandaiana, the large white flower of which has a few lines of pinkish colour on the labellum. A plant of perhaps semi-albino nature is cultivated in Phalænopsis Lueddemanniana ochracea, the purple colour being absent, leaving ochreous-yellow markings, which render it distinct.

Some idea of the way plants are propagated may be gained from the fact that several thousand plants of Cypripedium insigne Sanderæ have all been produced from a couple of dozen plants purchased but a few years ago. During the last flowering season of this useful and popular plant, no less than 9,000 flowers were open at the same time. As it is now difficult to obtain importations of Cattleya and Lælia species, it is necessary to take care of all back bulbs, and to propagate plants by division whenever possible. Thousands of young plants produced in this way are being grown-on in small pots suspended in rows from the roof, and it seems that before long the whole of a large span-roofed house will be completely filled with plants of flowering size. Cattleya Warscewiczii, generally known as C. gigas, is also another feature of this place, and it is no uncommon occurrence for nine and ten flowers to be produced on some of the spikes.

Orchids of the United States of America.—The *Gardeners' Chronicle* (of America) May, 1924, contains an article on "Our Native Orchids under Cultivation," by Mr. Charles H. Chesley, who writes:—"An interesting experiment that I have tried is the forcing of certain Orchids into bloom during the winter. During the summer, whenever the plants are located, the places are marked, and just before cold weather comes on, the plants are taken up, together with a good bit of the surrounding soil, and set in pots containing nothing but leaf-mould or bog earth. Plants are set outside and allowed to freeze for a week or two and then brought to a sunny window. Calopogon, Habenaria, Pogonia and several others bloom in a few weeks under this treatment. In taking up and removing plants that grow in deep woodlands, an effort should be made to keep the new conditions as nearly like the old as possible. This is the whole secret of success. Do not expect Orchids to grow in ordinary gardening soil. Bring leaf-mould and bog peat to prepare the beds, also see that the conditions of shade and sunshine are right. This is true of all kinds of woodland plants. Note carefully the conditions under which the plants grow in the native environment, then duplicate the conditions as nearly as you can. Under

expert cultivation, not only the native Orchids, but many other woodland plants can be naturalized in the home grounds. Under cultivation, many of the native plants give larger and finer flowers, and frequently the colours will be more intense. Many of the native Orchids which I have not mentioned have inconspicuous green flowers, and some of them even show a disposition to improve and become more noticeable under cultivation."

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Tournai	Bc. Mrs. J. Leemann × C. Dietrichiana ...	Sander et Fils.
Brassolæliocattleya Mrs. J. Emsley ...	Lc. Charlesworthii × B. Digbyana ...	Mansell & Hatcher.
Brassolæliocattleya Charleroi ...	Bc. Marg. Fournier × Lc. Gottoiana ...	Sander et Fils.
Cattleya Colin Shill	Kienastiana × Fabia	Clement Moore.
Cattleya Furnes	Mossiæ × Dupreana	Sander et Fils.
Cattleya Heyst	Percivaliana × Suzanne Hye	,,
Cattleya Minnetonka	Octave Doin × Lueddemanniana	Clement Moore.
Cattleya Norman	Cooksonii × Warscewiczii	C. J. Lucas.
Cattleya Thorout'	President Wilson × Hardyana	Sander et Fils.
Cattleya Roulers	Schroederæ × Suzanne Hye...	,,
Cattleya Zeebrugge	Mulleri × Suzanne Hye	,,
Cymbidium Victrix	Venus × Alexanderi	Sanders.
Læliocattleya Amiens	C. Suzanne Hye × L. Jongheana	Sander et Fils.
Læliocattleya Appeerley	Hyeana × Canhamiana	Mansell & Hatcher.
Læliocattleya Louvain	C. Rex × Lc. Endymion	Sander et Fils.
Læliocattleya Lute	Lc. Lucia × C. Mossiæ	Sanders.
Læliocattleya Namur	C. Fabia × Lc. Aviés	Sander et Fils.
Læliocattleya Termonde	C. Trianæ × Lc. J. F. Birkbeck	,,
Læliocattleya Tirlemont	C. Hardyana × Lc. Britannia	,,
Læliocattleya Val de l'Eau	C. Schroderæ × Lc. Cora	Sanders.
Miltonia Cravenæ	vexillaria × Sanderiana	Mansell & Hatcher.
Odontioda Egbert	Oda. Zephyr × Odm. Pescatorei	Stuart Low.
Odontioda Radiance	Oda. Chanticleer × Odm. p-rcultum ...	Sir G. Holford.
Odontioda Zena	Oda. Devo-siana × Odm. Pescatorei ...	Cowan.
Odontoglossum Irene Gill	crispum × Aglaon	Mansell & Hatcher.
Odontoglossum Gatton Gem ...	crispum × V.C.	Sir J. Colman.
Sophrolæliocattleya Firefly	Slc. Marathon × C. Empress Frederick ...	Sanders.
Sophrolæliocattleya Magnet... ...	Slc. Virginia × C. Hardyana	Sir G. Holford.

CHARLESWORTH'S CATALOGUE.—Messrs. Charlesworth & Co. have recently prepared a new edition of their catalogue, extending to 2422 items. A useful figure is the indication, by means of the letters C, I and W, as to whether cool, intermediate, or warm house treatment is necessary for the respective sections, or individual plants. The temperatures recommended at night time are as follows:—Cool house, winter, 50-55 degrees; summer, 55-65 degrees; Intermediate house, winter, 55-60 degrees; summer, 60-70 degrees; Warm house, winter, 60-65 degrees; summer, 65-75 degrees. The day temperatures may vary from 5-10 degrees higher, or even more, if run up by sun heat.

COLLECTIONS FOR SALE.—Announcements in our advertisement pages refer to the sale by private treaty of the Tyntesfield collection, and also of a collection numbering about 500 plants.

CULTURAL NOTES.

NANODES Medusæ, the flowers of which are very interesting, if not strictly pretty, should be grown in the cool house during summer and the intermediate one in winter. The unusual colour of the flower, and the large, fringed lip are the most conspicuous qualities of the bloom. But the plant itself is attractive when well grown, the stems being drooping and thickly sheathed with short distichous light green leaves. It does well in either baskets or pans suspended, and but little, if any peat should be used, as it seems to thrive well in sphagnum moss alone. Now is a good time to re-pan or top-dress, and it is fond of a good supply of water during the summer months.—*J. Mackay, August,* 1905.

Cattleyas that are growing freely or developing their new pseudo-bulbs should have water freely, providing the material used was of a very fibrous nature. As the growths finish up on those varieties that take their rest between the time of making bulbs and flowering, gradually reduce the water supply, taking care that they have enough afforded to thoroughly develop the new pseudo-bulbs. Many consider that the new pseudo-bulbs are ripened with the aid of direct sunshine. To a certain extent I agree, but if the new bulb has been properly built up it will not want anything like so much sunning to give it the required solidity. I therefore advise doing as much as possible during the growing period to harden the growths as they develop, rather than trust to sunshine in the early autumn to solidify the soft and not properly-developed bulbs.—*W. P. Bound, August,* 1907.

Every Orchid enthusiast should at least try his hand at growing Disa grandiflora, as it is such a beautifully showy species when well-grown, and this month it will be making quite a brilliant show. It is not always, however, that one can succeed in growing it well. The conditions under which Disa grandiflora thrives best are so delightfully simple and easily obtainable that its cultivation is always well worth a trial. The chief points to keep in mind are as follows :—a cool moist frame or pit during summer, during which time they should never be allowed to become dry for the want of attention, nor burnt for the want of shade and air. About now they bloom, and, immediately the flowers are over, division of the roots, or re-potting, should take place when needful, employing sandy peat for this purpose. Let them still occupy their cool, moist frame or pit until the nights are too cool for them to remain longer, when they should be taken to winter in a house where the temperature averages from 40 to 50 degrees. From the time they bloom in August and September until the ensuing winter is past but little water at the root will be required, enough only to keep them plump and healthy. Be careful to keep yellow thrip away by the use of a little tobacco powder. When once the proper treatment is

rightly hit upon, Disas grow and propagate very freely, as the offshoots, which are always plentiful, may be removed from the parent tuber and potted off in small pots.—*H. A. Burberry, August*, 1898.

GENERAL HINTS.—The month of August marks the dividing line between the growing and resting seasons for most Orchids. Gradually less shading will be required on all the houses, as the sun declines in power, and the shadows caused by the bars are already longer than they were a month ago. The nature of the foliage changes with the cooler nights and the approach of autumn, and the same amount of sun which might have been injurious during the early summer will now do good. Those Orchids which are deciduous will require little water after the foliage has fallen. Pleiones will be losing their foliage towards the end of the month, when watering will be discontinued as they come into flower. Catasetums, Cyrtopodiums, Mormodes, &c., will also require a dry rest. Watering must be gradually reduced as the foliage becomes yellow. On the other hand, Cattleyas, and all plants which retain the foliage, must have a good quantity during the autumn, even although finished up. There are many plants in the Cattleya house now finished growing for the season, and others have little more than started. To keep a Cattleya which has finished growth very dry thus early in the autumn, with the intention of hindering it from restarting, will be going the right way to defeat the object in view. It should be watered when it is dry. Lælia purpurata has now started, and many of its hybrids, including Lc. Aphrodite, Lc. Wellsiana, &c., are on the way. Most of the hybrids which have L. purpurata for a parent, grow slowly half-way through the winter, so no discouragement need be felt if they appear a long way behind. In a house containing a large number of plants, there are always a few that are in bad health. There may be a great many reasons for this, and a different reason might be assigned to each individual case. Whenever a plant is observed in bad health the compost should be examined, and in many cases the plant will require to be put into a smaller pot. Sometimes a quite healthy plant goes back after repotting, as the result of an overdose of water. As the plant was repotted in anticipation of its remaining healthy, the check may mean that the pot is now too large, and if the roots have gone black it will feel itself in a too insanitary condition to go on. Plants to which this has happened should be taken out, all the dead roots cut off, and repotted in, if need be, a smaller pot. This should be done at any and every season, for if a plant loses all its roots in the compost, it rarely, if ever, does any more good in that pot. The really busy season can now be considered over, but this does not mean that the Orchid grower has now nothing to do. There is a multitude of odd jobs always cropping up, and the routine work is at all times with us.—*J. M. Black, August*, 1906.

ROYAL HORTICULTURAL SOCIETY.

June 24th, 1924.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), C. J. Lucas, J. E. Shill, John Cowan, J. Wilson Potter, Fredk. J. Hanbury, A. Dye, Henry H. Smith, H. G. Alexander, Chas. H. Curtis, Richd. G. Thwaites, and Jas. O'Brien.

First-class Certificate.

Odontoglossum Doreen var. D. A. Cowan (Empress of India × eximium) ; from J. J. Bolton, Esq., Claygate, Surrey (gr. Mr. S. Lyne). A remarkably fine result, in which the spike bore five large flowers, the segments unusually developed, round in form and prettily marked with numerous bars and spots of reddish colour.

Award of Merit.

Cypripedium Godefroyæ leucochilum giganteum; from Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. Collier). One of the best forms of this Siamese species, the flower being larger, and more richly coloured than typically seen. Of honey-yellow colour, the sepals and petals heavily marked with maroon, labellum unspotted.

Botanical Certificate.

Dendrobium lævifolium ; from Sir Jeremiah Colman, Bart. A singular species of densely tufted habit, and bearing about forty short spikes, each having from two to four flowers of deep rose colour. Previously known as D. asperifolium.

Groups.

J. J. Bolton, Esq., Claygate Lodge, Claygate, Surrey (gr. Mr. S. Lyne), was awarded a Silver-gilt Banksian Medal for a group of unusually fine Odontiodas and Odontoglossums. In the centre was Oda. magna rubra, to which a First-class Certificate was given at the Holland House Show in 1921, and now shown with a spike of 19 flowers of brilliant red colour, the segments having a narrow rose-tinted margin. On one side was Odm. Pyramus, with a full spike of ten large flowers of violet-purple colour, and possessing a beautiful sheen ; on the other Odm. Exworth, a handsome flower of the eximium type. At the back was Odm. majesticum, with singular light areas on the otherwise rose-purple petals, and Odm. San Juan, a large flower, segments heavily blotched with rose-purple. Blotched crispums and other Odontoglossums were also included. In recognition of the high state of culture exhibited by these plants, a Silver Lindley Medal was awarded to Mr. S. Lyne.

Messrs. Cowan & Co. received a Silver Banksian Medal for a group comprising selected forms of Læliocattleya Canhamiana, including the

variety alba, and Lc. Aphrodite. Cattleya Mossiæ Wageneri carried six white flowers, C. Harold a spike of three large blooms, and C. Kienastiana alba bore a white flower, the lip golden, margined with rose. Cochlioda Nœzliana was in fine form, as also were several Odontiodas derived from it, while a strong plant of Odontoglossum Uro-Skinneri carried a tall spike of 15 flowers and buds.

Lady Aberconway and the Hon. Henry D. McLaren exhibited Cypripedium Virgo, a pleasing hybrid obtained from Psyche and Godefroyæ. Flower porcelain white, dorsal sepal having a few maroon-coloured lines, petals lightly spotted with similar colour.

Sir Jeremiah Colman, Bart., exhibited cut flowers of the rare Bulbophyllum inflatum, in which the rachis is much inflated, also of B. orthoglossum and the pretty B. guttulatum.

Messrs. Charlesworth & Co., staged Odontioda Cornelia (Diana × Madeline, with a long spike bearing eleven large flowers, which on opening are of terra-cotta colour, but subsequently become coppery-red.

Mr. G. Reuthe, Keston, Kent, exhibited a number of well-grown examples of Orchis foliosa, and several other terrestrial species.

July 8th, 1924.

Members of the Committee present:—Sir Jeremiah Colman (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, E. R. Ashton, J. Wilson Potter, A. McBean, John Cowan, Richd. G. Thwaites, H. H. Smith, H. G. Alexander, J. E. Shill, C. J. Lucas, F. J. Hanbury, T. Armstrong, and W. J. Kaye.

AWARD OF MERIT.

Vuylstekeara Edna var. Normandy (Miltonioda Harwoodii × Odontioda Charlesworthii); from Messrs. Charlesworth & Co. A much improved form of this trigeneric hybrid, the branched spike bore 31 flowers and buds, of reddish scarlet colour, the comparatively large labellum lighter, and the column rose tinted.

GROUPS.

Messrs. Stuart Low & Co. were awarded a Silver Banksian Medal for a group of species and hybrids. Among the former were the fine Cattleya Warscewiczii rochellensis, with two large flowers, Brassia verrucosa, the handsome Dendrobium thyrsiflorum, with several many-flowered spikes, Maxillaria luteo-alba, with flowers of yellow and white, and the greenish Epidendrum virens. Cypripediums were represented by Fairrieanum, the interesting C. Parishii, as well as a fine example of C. Godefroyæ. In Slc. Argonaut, Low's variety, a richly coloured hybrid was staged, the three medium-sized flowers being of intense violet-purple colour, with the

labellum claret-crimson. A pretty novelty was seen in Odontioda Egbert (Oda. Zephyr × Odm. Pescatorei).

Messrs. Sanders received a Bronze Banksian Medal for an interesting exhibit, comprising a pretty variety of Cattleya Kienastiana Sanderæ, the handsome C. Hentschelii, and C. nivea, the latter obtained by crossing C. Leopodii alba with C. Lady Veitch, and having greenish sepals and petals and a broad white labellum. Brassocattleya Ilene var. Maharajah, with two large flowers, came in for appreciation. Many rare specimens were included, such as Bulbophyllum patens, B. longisepalum, Cirrhopetalum pulchrum, and an unusually fine variety of Masdevallia Wallisii. There were also good examples of Phalænopsis Rimestadiana and of the elegant Cypripedium Godefroyæ leucochilum.

July 22nd, 1924.

Members of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, E. R. Ashton, T. Armstrong, John Cowan, C. H. Curtis, H. H. Smith, H. T. Pitt, F. K. Sander, S. W. Flory, C. J. Lucas, as well as Thos. Roland and Geo. Butterworth, visitors from the United States.

Award of Merit.

Miltonia Constance var. Regina (vexillaria × Isabel Sander); from H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). A great improvement on M. vexillaria, which it resembles in size and formation, but the colour is a deep rose, with ray-like markings around the yellowish crest on the labellum.

Cultural Commendations.

To Mr. Thurgood, for a handsome plant of Miltonia Phalænopsis bearing 16 well-developed flowers.

To Mr. Kent, gardener to E. R. Ashton, Esq., Broadlands, Camden Park, Tunbridge Wells, for a splendid specimen of Promenæa xanthina bearing upwards of 70 flowers of citron-yellow colour.

Groups.

H. T. Pitt, Esq., Stamford Hill, was awarded a Silver Banksian Medal for an interesting group, containing the elegant Cœlogyne speciosa, the rare Angræcum Scottianum, Promenæa Crawshayana, the pretty Odontoglossum aspidorhinum, and Cattleya Warscewiczii var. F. M. Beyrodt. Cypripediums were well staged in Maudiæ and Enchantress, as well as in glaucophyllum.

Messrs. Stuart Low & Co. were awarded a Silver Banksian Medal for an attractive exhibit, in which Læliocattleya Aphrodite bearing eight flowers stood out prominently. Rarities were seen in Lælia crispa and Epidendrum Brassavolæ. Cattleyas were well represented by Dupreana and Hardyana

alba, while Cypripediums comprised Maudiæ and Parishii, the latter now rarely seen. Blc. Queen of the Belgians bore a large flower of delicate colouring, and interesting species were seen in Bulbophyllum barbigerum and Maxillaria luteoalba.

Messrs. Flory & Black staged Cattleya Warscewiczii var. Britain's Queen, with two large flowers, whitish, the labellum tinged with rose-pink. They also showed flowers of Læliocattleya Maisie (Lc. H. T. Pitt × C. Hardyana) and Cattleya Aphrodite (F. W. Wigan × Alexandra), both promising novelties, the colour being richly displayed.

Shirley H. Jenks, Esq., Pilsdon, Bridport, Dorset, sent a finely cultivated example of Stanhopea Wardii.

ORCHIDS AT YORK GALA.

THE York Gala of 1924 afforded an opportunity for several growers of Orchids to exhibit attractive plants. A praiseworthy group was that shown by J. McCartney, Esq., Hey House, Bolton (gr. Mr. C. F. Potts), whose plants were in an excellent state of cultivation. He staged Læliocattleya Ganymede with 12 flowers, Lc. Domos with eleven, as well as Lc. Aphrodite, and Cattleya Isabel Sander with 10 flowers; Odontoglossum Gladys had as many as 70 flowers, O. Doris 20, O. amabile 20, and O. York Beauty 23; Odontioda Lambeauiana bore 40 flowers, and Oncidium curtum, 22. There were also fine examples of Dendrobium nobile album, Miltonia Charlesworthii, and Brassia verrucosa gigantea, the latter having two spikes with a total of 30 large flowers.

Messrs. A. J. Keeling & Sons also staged excellent Orchids, their Odontoglossum Trentino magnificum, with 25 flowers, won the 1st prize in the specimen class. Other Odontoglossums were Canopus and Harold, each with 20 flowers, O. Pescatorei roseum, 25 blooms, and O. crispo-Solon. Dendrobium moschatum cupreum and Cypripedium Gowerianum Gratrixiæ were much admired, and Miltonia Hyeana rosea was a pretty variety.

Messrs. Cypher & Sons had an attractive group containing fine varieties of Læliocattleya Dominiana, Lc. Canhamiana, Lc. Aphrodite and Lc. Wiganiana (Lc. Dominiana × L. purpurata). Among the Cypripediums were robust plants of Lawrenceanum, callosum Sanderæ, as well as Selenipedium caudatum. Various Thunias and Cattleyas, with the assistance of Dendrobiums chrysotoxum and infundibulum, completed the group.

Messrs. Mansell & Hatcher had an extensive exhibit, in which were fine forms of Læliocattleya Apperley, Lc. Britannia, and Miltonia vexillaria var. F. M. Ogilvie. Odontiodas were well represented in Sunbeam, very pretty, and Dainty.

MANCHESTER ORCHID SOCIETY.

June 27th, 1924.

MEMBERS of the Committee present:—R. Ashworth, Esq. (in the chair), Messrs. A. Burns, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Evans, W. Giles, J. Howes, F. K. Sander, E. W. Thompson and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum St. Elmo var. Laura, from H. T. Pitt, Esq., flowers of good formation, central area of segments rich purple.

Odontoglossum Senlac (Jasper × Lambeauianum), from Mrs Gratrix, a very large flower of the amabile section, heavily blotched.

Cypripediem Enchantress, Pitt's var., from H. T. Pitt, Esq., one of the largest and finest shaped flowers of this albino form.

AWARDS OF MERIT.

Læliocattleya Canhamiana var. Rosslyn; Cattleya Suavior var. Glory; Miltonia Wm. Pitt var. Mullii Rouge, and M. Wm. Pitt var. King's Crown; all from H. T. Pitt, Esq.

CULTURAL CERTIFICATES.

Mr. J. Howes, for Odontoglossum Doreen var. Dreadnought; O. crispum var. Lady Rachel; and Odontioda Earl of Chester.

Mr. G. Giles, for Odontioda Madeline var. Sunbeam; and Oda. Bradshawiæ var. Butterfly.

Mr. A. Burns, for Lycaste Deppei.

Mr. F. Thurgood, for Dendrochilum filiforme.

GROUPS.

S. Gratrix, Esq., West Point (gr. Mr. J. Howes), received a Gold Medal for a group of Odontoglossums in great variety.

A. Hanmer, Esq., Buxton (gr. Mr. G. Giles), was awarded a Silver-gilt Medal for a group composed principally of Odontoglossums.

H. T. Pitt, Esq., London (gr. Mr. F. Thurgood), received a Silver-gilt Medal for a meritorious exhibit.

Mrs. Gratrix staged various Odontoglossums and Odontiodas.

Mrs. Bruce and Miss Wrigley exhibited a fine example of Lycaste Deppei.

Messrs. Sanders staged a meritorious exhibit comprising many fine Odontoglossum hybrids, as well as Cypripediums and Cattleyas.

ANNUAL GENERAL MEETING.

At the Annual General Meeting, F. K. Sander, Esq., presiding, the executive committee were unanimously re-appointed, Mr. A. Burns taking the place of Mr. J. Howes, who desired to retire. The members are Capt.

W. Horridge, Rev. J. Crombleholme, Messrs. R. Ashworth, A. Burns, J. Cypher, A Hanmer, D. Losh-Thorpe and H. Arthur.

The Awards Committee were elected; there being two resignations, it was decided to invite Mrs. Bruce and Miss Wrigley to fill the positions, and this they have graciously accepted. The constitution being:—Mrs. Bruce, Miss Wrigley, Messrs. R. Ashworth, H. Astley Bell, W. Beesley, Rev. J. Crombleholme, A. Hanmer, Capt. W. Horridge, D. Losh-Thorpe, J. McCartney, H. T. Pitt and J. Whitham, 12 amateurs. D. A Cowan, J. Cypher, A. G. Ellwood, J. Evans, A. Keeling and F. K. Sander, 6 trade growers. A. Burns, A. Coningsby, J. Cypher, W. Giles, J. Lupton, and E. W. Thompson, 6 gardeners.

The Prizes were presented to the successful exhibitors as follows:—To S. Gratrix, Esq. (gr. Mr. J. Howes), Mr. J. J. Bolton's prize, the Botanic Society of Manchester's Silver-gilt Medal, Messrs. Cowan & Co.'s prize, Messrs. Charlesworth & Co's prize, Messrs. J. Cypher & Sons' prize, Mr. J. Evans' prize, and Mr. A. Hanmer's prize; Mr. P. Smith's prize to Mr. J. Howes; Mr. and Mrs. S. Gratrix's prize to A. Hanmer, Esq., with gardener's prize to Mr. G. Giles; Mr. D. Losh-Thorpe's prize to A. Hanmer, Esq., with gardener's prize to Mr. G. Giles; Mr. P. Smith's prize (3rd), to Mr. G. Giles; Mr. J. Evan's prize (2nd), to A. Hanmer, Esq., with gardener's prize to Mr. G. Giles; the Botanic Society of Manchester's Silver Medal to Mr. A. Burns; and Mr. P. Smith's prize (2nd) to Mr. A Burns. A cordial vote of thanks was passed to all exhibitors and officials.

STANHOPEA WARDII.—One of the best known of the Stanhopeas. It was originally introduced from La Guayra, the port of Caracas, by Messrs. Loddiges in 1828 through their correspondent Mr. Ward, after whom it was named, and shortly afterwards by Messrs. Low & Co., from the same locality. It was subsequently found in Guatemala and sent from that country to Messrs. Loddiges and to the Royal Gardens at Kew. It is distinguished from S. oculata by the short hypochile of the labellum.

MASDEVALLIA VEITCHIANA.—This elegant plant was discovered in the lofty Andes of Peru by Pearce in 1866. A few years later it was re-discovered in the same locality by Walter Davis, who stated that it grows in the crevices and hollows of the rocks with but little soil, at an altitude of 11,000-13,000 feet. It is a variable plant, the flowers differing in size, colour, and in the manner in which the papillæ is spread over the inner surface of the sepals. A large flowered form, grandiflora, may be distinguished by having the upper sepal densely covered with purple papillæ, while in the lateral sepals this covering is confined entirely to the outer half, the inner being of the purest orange-scarlet and destitute of papillæ.

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To face p. 256.

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Founded in 1893 by R. A. ROLFE, A.L.S.

Edited by GURNEY WILSON, F.L.S.

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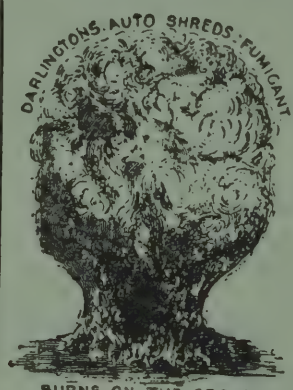

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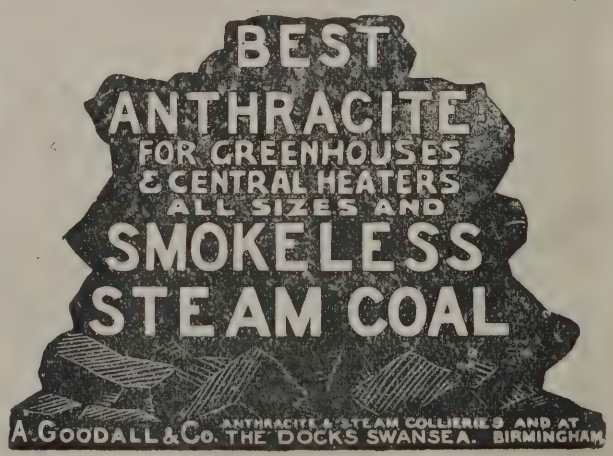

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THE ORCHID REVIEW.

VOL. XXXII.] SEPTEMBER, 1924. [No. 375.

NOTES.

VISITORS FROM THE UNITED STATES.—The recent Boston Orchid Show has certainly awakened a keen desire among amateur and trade growers to visit one another's collections. During the past summer England has been favoured with the visits of Mr. Jere A. Downs, Winchester, Mass., Mr. Thomas Roland, Nahant, Mass., Mr. Joseph Manda, West Orange, N.J., Mr. George Butterworth, South Framingham, Mass., and Mr. Thomas Young, Bound Brook, N.J. We believe they all took back favourable opinions of English methods of cultivating their favourite plants.

SALE OF VALUABLE ORCHIDS.—On July 25th a collection of valuable Orchids was disposed of by Messrs. Protheroe and Morris, 67, Cheapside, London, when the following prices were realised: — Odontoglossum crispum Enchantress, 22 gns.; O. eximium La Papillon, 38 gns.; O. Gorizia perfecta, 65 gns.; O. Mars, 28 gns.; O. Eldorado II., 16 gns.; O. Louis XIV., 12 gns.; O. St. Edmunds, 12 gns.; O. Continental, 9 gns.; O. Fascistina, 13 gns.: Brassolæliocattleya Muriel, 19 gns.; Brassocattleya Muriel magnifica, 25 gns.; Cattleya Clotho, Fasey's var., 10 gns.; C. Tityus Rex, 13 gns.; Sophrolæliocattleya Flamingo, 19 gns.; Læliocattleya Momus, 13 gns.; and Lycaste Skinneri hellemensis, 9 gns.

LYCASTE TRICOLOR ALBENS.—At the meeting of the Manchester Orchid Society held July 25th, Mrs. Bruce and Miss Wrigley exhibited Lycaste tricolor albens, when a Cultural Certificate was given to their gardener, Mr. A. Burns, for his ability in bringing the plant up to a high standard of cultivation. The variety albens is distinguished by the very pale green sepals and petals and a white labellum. This plant recalls the one shown by Mr. Bradshaw at the meeting of the Royal Horticultural Society on July 17th, 1906, when an Award of Merit was given. On that occasion Mr. Bradshaw also showed two fine plants of the typical form of L. tricolor, one with sixteen flowers, the other with twenty-four flowers, a Cultural

Commendation being given to his gardener. L. tricolor is a distinct Central American species, and was originally introduced by Warscewicz, from Guatemala, in 1849. The sepals are light brownish-green, the petals and labellum white dotted with purple, the spots being larger and darker on the lower half of the labellum.

PHALÆNOPSIS.—The following new Phalænopsis hybrids have been raised in the collection of Baron Toshiya Iwasaki, a member of the Imperial Orchid Society of Japan:—P. Asahi (Lindeni × Esmeralda), June, 1923; P. Tokyo (leucorrhoda × Stuartiana), March, 1924; and P. Yoshino (amabilis formosa × Sanderiana), March, 1924. In the same collection, new varieties of hybrids previously recorded have been produced in the following:—P. Artemis var. Niitaka (amabilis formosa × rosea); P. Leda var. Fuji (amabilis formosa × Stuartiana); and P. Rothschildiana var. Tatsuta (amabilis formosa × Schilleriana).

MALFORMED ORCHIDS.—In the *Orchid Review*, June, 1923, p. 170, there is mention of a Cypripedium having two distinct dorsal sepals. There has just opened in my collection a flower of Cypripedium Hera (Euryades) var. New Hall Hey, which has two dorsal sepals and a double staminode. The other parts of the flower are perfectly formed. Another peculiarity has occurred in Oncidium McBeanianum and Odontoglossum citrosmum, in both plants of which a small pseudo-bulb with leaves has formed on the apex of the last made-up growth.—*Sara Wood, "Moonya," Upper Hawthorn, Victoria, Australia.*

GREEN ODONTIODAS.—In no other section of hybrids has so much variation been seen as in Odontiodas. Starting off with the light scarlet of Oda. Bradshawiæ, the colour was soon increased in intensity, and through all shades of red to the darkest chocolate. Orange-yellow has also appeared, and not a few examples have become noteworthy on account of the rich violet area surrounding the blotched centre of each segment. All these hybrids have been produced by using C. Nœzliana, C. rosea, S. sanguinea, and C. vulcanica. But another species exists in C. brasiliensis, described by Mr. Rolfe in 1904 (*Gard. Chron.*, ii., p. 141), and which may yield a distinct colour section. It differs from all other species of the genus in having greenish segments, in which a slight suffusion of olive brown is noticeable. The plant seems to have been put in commerce by M. Binot about twenty years ago, but does not appear to have been maintained in collections. Whether greenish flowers are desired by amateurs is perhaps rather a doubtful point, but in these days of producing novelties the experimental crossing of this species with a few selected Odontoglossums and Odontiodas might be made.

ORCHID CULTURE SIXTY YEARS AGO.

THE extensive Orchid library of Mr. Albert C. Burrage contains a Manuscript Memorandum Book, kept by Mr. P. H. Gosse, of Sandhurst, Torquay, England. It consists of 112 sheets, 8vo size, and gives information concerning the methods employed sixty years ago in the cultivation of Orchids.

Under date April 12th, 1864, Mr. Gosse wrote: "In the autumn men bring round from Dartmoor dried peat in the form of square slabs, 7 by 5in. and 2in. thick. They resemble cork in appearance and lightness, but on careful examination they are seen to be wholly composed of sphagnum, all the parts of which are in many cases still perfect. It occurred to me that this would be a nice material on which to block Orchids, if it be found to bear moisture without disintegration. Accordingly, for experiment, I have to-day blocked Oncidium Lanceanum from Jamaica on it."

May 2nd. "The peat slabs become softened by moisture and unable to maintain sufficient hold of the nails for suspension. I, therefore, removed Oncidium Lanceanum and potted it."

April 28th, 1865. "Dendrobium aggregatum, which I bought last June, was clinging to a round block, probably a piece of the branch on which it had grown in the Indian forest. The bark had become much decayed, so as readily to separate in a sheet from the worm-eaten wood, as soon as the binding wires were loosened, retaining sufficient tenacity to hold together, with care in handling, yet so tender as to flatten out easily. I now prepared to re-fix it, and on a new material. Taking a common roof-tile, 12 by 6in., I bored a hole with a gimlet near one end, into which I fixed securely a strong loop of wire for suspension, and then with a file made a row of notches about 1½ inch apart along each edge to afford hold for the binding wire.

"The tile being thus prepared, I laid it before me on the potting bench, placed on it a thin layer of peat-fibre, on this a sprinkling of charcoal dust, and over this a layer of coarse moss. Thus I had a coarse surface not quite extending to the edge of the tile on either side. On this I carefully spread the bark of the old block, to which was clinging the Dendrobium, a mass of about 120 bulbs, with scarcely a root disturbed. Then, having a quantity of growing moss, which we strip off in sheets from stones, and which I always keep by me, I spread suitable bits all around the edges of the bark, covering every spot not occupied by bulbs, and firmly wired the whole, crossing and recrossing the mass with copper thread, passing it through the notches at the edge of the tile, and bringing it round and round behind.

"When finished, the plant was so firm that one could not tell that it had not grown there, while the moss, when the whole was dipped in the tank

and drained, almost concealed the wires, and presented the appearance of natural growth. Thus I have my plant on an imperishable block, of a porous texture, to which the new roots will doubtless cling, and readily and lovingly as we often find to our solicitude they do to the interior of a flower-pot, when we want to shift."

CYPRIPEDIUM BARBATUM BIFLORUM.

THE inclusion of a plant under this name in a recent sale catalogue by Mr. Harry Dixon recalls several incidents of the past. The varietal name biflorum denotes that two flowers are frequently borne on the same scape, but whether an earlier name exists for this precise variety seems a little uncertain. Anyhow, it may be retained, as it defines one of the characteristic features of a plant that has been cultivated for nearly sixty years.

In Veitch's *Orchid Manual* the variety biflorum is given as a synonym of C. barbatum Crossii, a plant known in gardens by this name prior to 1865, and stated to be very distinct, its foliage being of a lighter hue than that of the normal species, and its flowers produced much earlier in the year, March or April, sometimes in February. It is the subject of a coloured plate in the *Belgique horticole*, 1865, the accompanying text stating that it had been discovered by Cross, the traveller, a remark which Messrs. Veitch say is doubtful, it being more probable that another Cross, gardener to Lady Ashburton, and raiser of the hybrid that bears his name, may have been the first to detect it in the collection under his charge.

C. barbatum Warnerianum is also considered identical with the above. It is well figured in *Select Orchidaceous Plants*, III., t. xi., one of the scapes being shown with an additional bud. In the descriptive text we read:— "This plant has flowered in the Broomfield collection for many years in succession. It was exhibited by us (B. S. Williams) at the Grand International Show at St. Petersburg in 1869, and was at that time very much admired; it then bore about fifty of its richly coloured blossoms, and travelled the whole distance from London to St. Petersburg and back, without being injured in the least. We know of no other species or variety of this genus that will bloom in so small a state. From a plant in a four or six-inch pot one can obtain as many as twelve or more flowers."

The above description is continued with the remark that "the flower-stems are sufficiently firm and strong to be able to support the flowers without the aid of sticks," a statement that will strike practical growers of to-day as rather unnecessary, for under ordinary methods of cultivation no such assistance is required with the general run of Cypripediums.

DENDROBIUMS.

By RICHARD G. THWAITES.

WHILST there are undoubtedly wealthy amateur Orchid enthusiasts, who have no need to consider the subsequent value of any plant they may purchase in flower, there are also a number to whom subsequent value is a matter of some importance. No matter how small a collection may be at the commencement, once the amateur is bitten with the Orchid fever he will, sooner or later, become a judge of varieties, and purchase in flower better and more costly varieties than are already in his possession.

Wealthy amateurs are content to pay high prices for novelties and very fine varieties, simply for the sake of possession, knowing full well that once the plants have gone out of flower their value has materially fallen. These amateurs, however, have highly skilled growers, who know how to make the best of their employers' purchases. But there are throughout the country a large number of Orchid lovers each with one general gardener, or perhaps the Orchids are under the sole care of the owner. Remembering my own small commencement I know how easy it is to make mistakes. Every encouragement must be given to "small amateurs," for to-morrow they may be prominent growers, ready to fill the places of those who are falling out.

If subsequent values are a consideration, then some use must be made of fine varieties purchased, either by means of hybridising or propagation. Except for general interest there is little hope of the small amateur retaining his original outlay by means of hybridising. The skill, experience, and facilities at the disposal of the professional grower make it impossible for the small amateur to successfully compete with him.

The growing of Orchids of any class must be looked upon as a hobby, and the expenditure viewed as one views the expenditure on a seat at a theatre, jewellery or fashionable clothes, all of which give a certain amount of pleasure according to taste. A fair proportion of the original outlay can, however, be retained in the Dendrobium family by means of propagation, and a considerable amount of pleasure derived from the process itself. The very fact of producing one's own plants will help to keep alive and stimulate interest in Orchids generally.

There are fashions in Orchids as in everything else, and there are reasons for change of fashion. Some years ago, Dendrobiums were in considerable demand, especially in the Midlands, where many of our most beautiful hybrids were raised, but owing to the large number of varietal names given to plants bearing very similar flowers, it became difficult to be sure of a plant's varietal name without referring to the label. This fact and the growing demand for blotched forms of Odontoglossum crispum caused interest in the genus to wane.

There are, however, a few prominent amateurs who have not only remained faithful to the cultivation of Dendrobiums, but they have produced and shown at the Royal Horticultural Society new and very fine hybrids, quite distinct from the class which bore the varietal names of Luna, Juno, The Pearl, etc., etc. Whether this fact is the sole reason for Dendrobiums again coming into demand, I do not know, but there are indications of re-awakening interest in this class.

The very fine articles on Dendrobiums which have lately appeared in the *Orchid Review* will, it is to be hoped, do much to stimulate interest and induce the amateur to make a special study of this class. The day of high-priced Dendrobiums has gone. Specimens of the finest kinds in cultivation may now be purchased at very reasonable prices. They produce abundance of flowers at a time when flowers are welcomed, and, if propagated, the original outlay can be very nearly represented in the propagated plants. The great advantage in growing Dendrobiums is the ease with which they are propagated. See *Orchid Review*, 1924, p. 133.

The method of propagation adopted at Chessington varies slightly from that above referred to, and as about nine out of ten cuttings produce plants, both methods might be tried simultaneously. Here we have wooden boxes, each about 2ft. long, 1ft. 6in. wide, and about 3 inches deep. Holes are drilled in for drainage. On the bottom are a few broken pieces of slates, and then about an inch of broken crocks. The compost consists solely of broken up sphagnum moss and sand, well mixed. This is put upon the crocks to a depth of 1½ inches. A little sand is then put on the top to make the bed even.

The bulb is not cut mid-way between the nodes, but just under them. This leaves more of the bulb above the node than below it. The reason for this is that the cutting often rots upwards as far as the node, but seldom passes above it, and the cutting benefits by having a good green piece of bulb above the node. These cuttings are pushed into the compost as far as the node in a slanting position so that the eye at the node points towards the glass. The subsequent treatment is given in the *Orchid Review*, 1924, p. 133.

If the eyes are sound, plants can be obtained from old shrivelled bulbs with equal possibilities as from green plump bulbs, and a plant which is dying may be represented by its propagated pieces.

DENDROBIUM.—The genus Dendrobium was founded by Oloff Swartz, a Swedish botanist, one of the immediate successors of Linnæus, in Sweden, and in whose University, Upsal, he graduated. Swartz published a synopsis of the Orchids known to him in the Transactions of the Royal Academy of Science of Stockholm for 1800.

DENDROBIUM PIERARDII.

THIS species is horticulturally interesting as being one of the first, if not the first Indian Dendrobium introduced into English gardens. It was sent to the Royal Botanic Gardens at Kew early in the nineteenth century,

DENDROBIUM PIERARDII.

and was known to have flowered in the Botanic Gardens at Liverpool in the year 1821. It is named after Pierard, by whom it was introduced to the Botanic Garden at Calcutta.

The prevailing colour of the flower is a beautiful rose or pale purple, and the texture is translucent, the lip being pale yellow, with radiating lines of purple at the base. Some variation exists, and one form, characterised by smaller flowers with shorter ovaries and a labellum having a longer tube and shorter limb, was described as a species by Robt. Brown under the name D. cucullatum (*Bot. Reg. t.* 548).

D. Pierardii is a native of Sikkim, where it is found in tropical valleys as high as 3,000 feet. It also grows in Assam, Bengal, and southwards to Tenasserim and the Peninsula of India. The flowering season is April and May. Dr. Carey considered it one of the most beautiful objects in the vegetable kingdom.

This elegant Dendrobium is figured in the *Botanical Magazine*, t. 2584 (1825), with the statement that "it is cultivated at Calcutta by tying it on to a smooth branch of a tree, water being constantly conducted to it by a string through a small aperture in a vessel above; that so treated it hangs down the length of six feet, covered with flowers after the leaves decay."

PROMENÆA XANTHINA.—The genus Promenæa was founded by Lindley in 1843 for five species then referred to Maxillaria, among them being the subject of this note. P. xanthina was found by Descourtilz on the high mountains of Ilha Grande, Brazil, on the side towards the sea, and Gardner afterwards collected it on the Organ Mountains. Its bright yellow colour induced Descourtilz to call it "Epidendre Jonquille." It was in cultivation so long ago as 1856, when Reichenbach recorded it as flowering with Messrs. Booth & Son, at Hamburg. Under its later name, P. citrina, a coloured plate is given of this plant in the *Orchid Album* (vol. i., t. 7). At the meeting of the Royal Horticultural Society, July 22nd, an excellent specimen, bearing no less than 70 flowers, was exhibited by E. R. Ashton, Esq., Broadlands, Tunbridge Wells, when a Cultural Commendation was awarded to his able gardener, Mr. Kent. This plant had been grown in the cool house, along with the Odontoglossums, treatment which appears very suitable to its well-being. In former days it was the custom to place it under a higher temperature, but present experience shows that this and many other Orchids succeed equally well, and often better, in the cool house. By some authorities the Promenæas are regarded as a section of the genus *Zygopetalum*. Under the name *Z.* xanthinum majus a large and finely-coloured variety was in 1901 flowering in Mr. Tracy's nursery, Twickenham, subsequently passing into the collection of Mrs. Ida Brandt, of Zurich. In this plant the individual flowers measured over $2\frac{1}{2}$ inches across, and were of a bright chrome-yellow tint, with purple spotting on the base and side lobes of the labellum. P. Crawshayana was obtained by crossing stapelioides with xanthina, and first flowered in 1905.

ORCHIDS ALL MY OWN.

A PLEASING account of the successful cultivation of Orchids on a small scale is contributed by Mrs. J. Norman Henry to the July issue of the *Garden Magazine*, New York. Although everybody tells the author that the floor space of her tiny greenhouse is too small to be of any practical use, for it measures but 6 × 7 feet, experience shows that with a little reading up of the subject, Orchids have here well repaid their owner. Mrs. Norman says that "a little greenhouse does not necessarily absorb much time, a few minutes several times a day and an hour or two several times a year at potting time is all that it requires. It means also to me that my greatest pleasure is right at my door ready to enjoy at any hour of the day I have a little extra time to spare. That is a great deal, for I have five young children and could ill afford a luxury that kept me away from them."

Mrs. Norman uses as a title for her article "Orchids All My Own," and goes on to say that "these first Orchids of mine seemed the most beautiful things I had ever seen, and all had the typical Orchid fragrance. I kept them in a sort of cold frame all the spring and summer, but, of course, I knew they had to have a home, and so the following summer the little greenhouse was tacked on the rear of my house. Although my home is in the very heart of the city, and the four-story houses are all built against one another, it still gets a good share of sunshine and about as much as it needs."

With such a small structure one wonders how the requisite temperature is maintained, but we learn that six four-inch pipes connect with the house furnace and keep the interior comfortable, even when the thermometer drops to the single numbers. A thin layer of peat scattered on the floor assists in maintaining a moist atmosphere if sprinkled daily in hot weather. The chief difficulty that has to be contended with is the manner in which outside conditions affect the temperature, and in such a minute greenhouse the thermometer has to be watched very carefully. The pots in which the Orchids are growing stand upon different sized inverted pots, which is done, says their owner, "so that I can squirt the little seven-foot half-inch hose nicely without hitting any of the plants themselves."

"For years," continues this enthusiastic amateur, "I had about thirty Orchids, all different, and although, of course, I had some failures, still the successes have far exceeded my fondest anticipations and more than encouraged me. Cypripediums are considered the easiest of all Orchids to grow and handle; at least, C. insigne and its allied varieties. Certainly when a beginner starts in with Orchids, he (or she) usually purchases C. insigne, for, in addition to being so easily grown, it is also the cheapest.

My first purchase was C. insigne Sanderæ, which arrived from England in bloom with two perfect flowers, and never a spot or blemish to mar their beauty. Messrs. Charlesworth & Co. always packed the splendid plants they sent in such a wonderful way one would never know they had been moved, and this after a 3,000 mile journey."

MILTONIA RŒZLII.

AS the centenary of the birth of Benedict Rœzl occurred on August 12th, the following account of Miltonia Rœzlii will prove of interest. It is taken from Sanders' Reichenbachia, vol. II, t. 45 :—

"This is, pehaps, the finest Orchid discovered by the late Benedict Rœzl, a most genial and kind-hearted traveller, and a prince among collectors. The native haunts of Rœzl's plants are the hot valleys of the Dagua river in South America, and there and in the Cauca valley, near Juntas, it grows abundantly on low trees. Rœzl used to tell us that where it grows rain falls three hundred and sixty-five days in the year, and from this we may easily infer that it must be grown with us very moist indeed. He discovered it in 1872, and arrived in England with one solitary plant alive out of his large collection. This specimen he sold to Mr. Wm. Bull, of Chelsea, for 75 guineas. It flowered in December, 1873, and received a First-class Certificate from the Royal Horticultural Society, creating a great sensation in the Orchid world. Rœzl was quite enthusiastic in his description of this beautiful new Odontoglossum (now known as a Miltonia), 'a lovely flat flower like O. Phalænopsis,' he said, 'but with rich purple blotches at the base of the petals, and deliciously fragrant, as sweet,' he added, 'as is your English wild rose!' Those who would like to appreciate the last remark have only to smell the flowers of Rœzl's plant some balmy morning and they will assuredly recognise its delicious fragrance, which is different to that of any other Orchid known.

"Those who grow and enjoy their Orchids peacefully under a glass roof do not quite realise the battle that is fought in their interests by the plant collector abroad. Slowly, but surely, every acre of the globe is being traversed by these explorers—often the only white man in a whole district as large as the British Isles, he plods on his way; solitary, but dauntless, he goes into the world primeval, frought as it is with subtle dangers, illumined as it is with surprises and charms.

"There is a snowy-white form of M. Rœzlii, pure-white, one might say, save for the pale, lemon-coloured blotch on the expanded labellum. Some have called these white forms of coloured species 'albinos,' but others of us look upon them as reversions to that earlier stage in the evolution of the species, when all the individuals were normally white. Some day we may

hope to have explained more fully the manner in which flower colour struggles upwards from green, yellow, and white, through rose and purple, up to blue."

An example of Miltonia Rœzlii with dimorphic flowers was illustrated in the *Gardeners' Chronicle* (1902, xxxii., p. 135). It "represents two distinct varieties of M. Rœzlii flowering on the same plant." One spike bears flowers having the typical coloured blotch on the petals, while another spike has flowers entirely without any purple blotches. The plant was growing in the collection of M. William Barbey, Chambêsy, near Geneva.

Pleurothallis Rœzlii.—This plant was named by Reichenbach in 1877, after its discoverer, Benedict Rœzl, who found it in the vicinity of Sonson, at a considerable elevation on the western slopes of the central Cordillera of Colombia. It first came to public notice in March, 1885, when H. Godefroy exhibited a plant at the meeting of the Royal Horticultural Society. The coloured plate of P. Rœzlii in the *Orchid Album* (vol. x., t. 476) was prepared from a plant which flowered in the collection of M. A. A. Peeters, of Brussels. The erect peduncles bear drooping flowers, partially expanded, and of deep sanguineous purple.

Masdevallia macrura.—Discovered by Rœzl in 1871, near Sonson, growing on the moss-covered blocks of granite that are scattered over the ground around the town, and afterwards found by Patin and other collectors, but not introduced until 1876, when it was collected by Shuttleworth and sent to Mr. Wm. Bull, in whose nursery at Chelsea it flowered early in the following year. The plant is a giant among Masdevallias. The flower, which is proportionately large, is often regarded as an object of curiosity rather than one of admiration. The specific name refers to the long sepaline tails.

Epidendrum pumilum and E. Tonduzii.—I regret to see that I made an error in citation in the note on E. pumilum and E. Tonduzii (p. 163). The latter should be E. Adolphi. E. Tonduzii is of the group Encyclia, and is a common species of the hedgerows near San José. While collecting some plants of Eriopsis, I noticed that the thick succulent roots occasionally bear long spines, a fact of which I was unaware, and as surprising to me as was the discovery in Uganda of a bulbous Eulophia with leaves having strongly serrated edges. Catasetums and some Gongoras produce masses of erect projections from the roots that are spine-like, but those of Eriopsis are more scantily produced and sufficiently strong to render care in handling advisable.—*C. H. Lankester, Cartago, Costa Rica.*

SELENIPEDIUM CAUDATUM.

TO many amateurs the generic name Selenipedium is understood to comprise the South American section of the genus Cypripedium, and of the various species from this locality none is better known than S. caudatum. Originally described by Lindley in 1840, this plant remained unknown to horticulture until its introduction from the Huanuco district of Peru by William Lobb in 1847. It flowered for the first time in England in the collection of Mrs. Lawrence in the spring of 1849.

The outstanding attraction of S. caudatum is the remarkable length of the ribbon-like petals. When the flower first expands, the petals are three to four inches long ; they continue to grow for about ten days, in which time they generally attain their full length. From the second to the seventh day, they have been observed to increase in length as much as two inches each day. The total length of these organs varies somewhat with the vigour of the plant, but examples have been seen in which a length of over thirty inches has been produced.

For successful cultivation a moist situation in the intermediate house is necessary, with adequate protection from bright sunshine. Some cultivators adopt a softer compost for this plant, using a mixture largely composed of sphagnum moss, with some oak leaves and a small quantity of fibre, but different conditions may require an alteration in the method of culture until satisfactory results are obtained. It is, of course, not possible to grow these plants in England when exposed to the full effects of outside weather conditions, but it is worthy of note that S. caudatum var. Wallisii was found growing on the limestone rocks in full exposure to the sun's rays and where the range of temperature during the twenty-four hours was very considerable. It may be that this plant requires stronger light than that usually given to the genus Cypripedium, and in support of this suggestion cultivators in the United States of America should find it a suitable subject, for in their land the light is generally stronger than in European countries, such as England. Mr. Alfred J. Loveless, the well-known secretary of the American Orchid Society, is certainly to be credited with more than the usual amount of success, the accompanying reproduction showing an elegant specimen that was cultivated by him in the locality of Lenox, Mass., U.S.A

S. caudatum var. Warscewiczii was described by Reichenbach in 1852. It differs chiefly in the deeper and brighter colour of its flowers, especially of the petals and labellum. In 1867 it was figured under the name S. caudatum roseum, which remained popular in gardens for some time. According to R. Pfau, it grows exclusively on the tops of the highest trees, at sixty to a hundred feet and more above the ground.

SELENIPEDIUM CAUDATUM.

S. caudatum var. Wallisii was discovered in Ecuador, in 1872-3, by the collector whose name it bears. It is distinguished by having rather smaller flowers and lighter colours, often being almost white, the labellum slightly rose-spotted.

In the Luxembourg variety, so named on account of its having been first detected in the Luxembourg garden at Paris, the leaves are said to be much narrower, but very stiff and leathery, while the flowers have the sepals of butter-yellow colour, veined with green, the labellum dull green, and the petals dull purple.

Hybrids of S. caudatum, S. Dominianum (caricinum × caudatum), was raised by Dominy, and first recorded in 1870; figured in the *Floral Magazine*, t. 499. S. grande (longifolium × caudatum), raised by Seden, and recorded in 1881; figured in Veitch's *Orchid Manual*, where it is described as the most robust Cypripedium known; the sword-shaped leaves are twenty-four to thirty inches long, the flower scapes frequently exceed a yard in height. S. Schrœderæ (caudatum × Sedenii), raised by Seden, and recorded in 1883; figured in the *Orchid Album*, t. 196, and in Veitch's *Orchid Manual*, where it is remarked that "its stately racemes of large, delicately-coloured flowers afford a striking instance of the rapid progress made in the hybridisation of Orchids during the past few years." This was written in 1889, what could now be said regarding the progress of hybridisation!

S. Saundersianum (caudatum × Schlimii) appeared in 1886, and was named in honour of Mr. W. W. Saunders, at one time treasurer of the Royal Horticultural Society. S. nitidissimum (caudatum × conchiferum) was recorded in 1888, having been raised by Mr. Norman C. Cookson. S. giganteum (caudatum × grande) was raised by Messrs. Veitch in 1894. S. Finetianum (cardinale × caudatum) flowered in 1895, and S. Geralda (Lindleyanum × caudatum) came into flower in Mr. Rockefeller's collection during the year 1899.

The absence of any additional hybrids of S. caudatum during the last quarter of a century points to the fact that attention has been diverted to the more popular section of the genus known as Cypripedium, but, as a truly wonderful and attractive species, S. caudatum will stand supreme.

MILTONIA FLAVESCENS.—This species is frequently to be seen growing well and flowering profusely in collections in the United States of America. It is a native of Brazil, and was introduced to English gardens in 1832 by Mr. Wm. Harrison. Raceme 7-10 flowered, the narrow sepals and petals two inches long, straw-yellow, lip shorter than the other segments, white, streaked and marked with red-purple on the basal half, which is also traversed by about five radiating lines.

THE PAST AND THE PRESENT

CATTLEYA HARDYANA.—The dispersal of the celebrated Tyntesfield collection recalls many episodes of past history, for it was originally formed by Mr. George Hardy, whose name is permanently recorded in Cattleya Hardyana. In the year 1883, when hybrids comprised only a small percentage of the plants in collections, Cattleya Hardyana appeared quite unexpectedly amongst some imported plants. It was soon recognised as a natural hybrid between C. aurea and C. Warscewiczii, the flower clearly displaying the characteristics of both parental species. The high prices obtained for examples of this hybrid led to a very close scrutiny of all importations of both parents, and at least one expert used to pick out the majority of the plants of C. Hardyana by an examination of the venation on the under side of the leaf. Sums of £100 were often paid for C. Hardyana in the days when natural hybrids were in demand, but now it is the garden-raised hybrids that command our attention.

STANHOPEAS.—That many fine old species are well worthy of cultivation is saying something that has been said before, but the matter of cultivation now seems like becoming an accomplished fact, for during the last few months quite a number of amateurs have "discovered" an attractive species that to them is quite unknown. Stanhopeas are among these "discoveries," and examples that were fairly well known to former amateurs now come into flower with all the excitement surrounding them that at one time was attached to the first flowering of a new species. While it is true that the world-wide troubles of the last ten years have caused many collections to drop below their usual standard of culture, it is the high cost of fuel that has induced many amateurs to maintain a lower temperature in their houses, and on this account the tropical Orchids have suffered most. Consequently, in the case of Stanhopeas, the finely-grown plants that previously existed have dropped in size to very small pieces, and, in the majority of cases, to dimensions that are far too small for flowering results to be expected. Many of the plants have passed through the hands of several owners, and have oftentimes been removed to different localities, the labels in so doing frequently getting lost. By chance, some of these plants fall into the hands of the new race of Orchid amateurs, and they take on their cultivation with all the enthusiasm that surrounds an Orchid of unknown history, and when, after a few years of careful attention, the strong pendulous spike of flower buds is seen pushing through the base of the basket in which the plant is growing, the owner's animation reaches its highest point.

TEMPERATURES.—Present day methods of cultivation prove that many sections of Orchids can be successfully grown in lower temperatures than were at one time recommended. In fact, it is not unlikely that many plants

were in the past killed through being kept in unreasonably high temperatures. A note on page 148 of our August issue refers to temperatures recommended by a present-day trade-grower, and these are certainly less than those advised nearly a century ago. An old Orchid catalogue of W. Rollisson & Sons, dated 1877, shows that matters were becoming more reasonable at that period. Some of the items in this catalogue have the letter "I" prefixed, denoting that an intermediate temperature is required, others the letter "G," denoting plants "which require no more heat than that of a greenhouse." But of the large number that are without any letter of indication we read "All the others should be grown in a stove heat, at a temperature, *when growing*, of from 80 to 90°, or rather more according to circumstances, by day, and at from 70 to 80° at night; *at rest*, the day temperature should be from 55 to 65°, and from 50 to 60° at night."

FIRE HEAT IN DAY TIME.—J. C. Lyons included a monthly calendar of necessary work in his "Practical Treatise on the Management of Orchidaceous Plants," published in 1845. For September, he stated that "Fires ought now to be lighted in the warm-house during cold days, but allowed to go out in the evenings. It is natural and, therefore, better to have the temperature considerably lower at night than during the day." Lyons certainly displayed a certain amount of originality in his advice, and no doubt came very near the true needs of the warm-house section of Orchids, for nothing seems more against their welfare than to enter a house overcharged with moisture and the temperature far below the necessary figure. Growers may take a hint from this method and use a little fire-heat during the day time, especially when, owing to a dull summer, the growths of many plants are uncompleted when the month of September arrives. It is a common saying that English summers are not what they used to be, and perhaps, in 1845 there was but little need for fire heat during September nights. However, the attentive grower takes each day as it comes and applies his skill and methods in accordance with the prevailing conditions.

LÆLIA CRISPA.—There was a time when this attractive species could be seen in many collections, but now it is a rarity, and for that reason the plant recently flowered by Messrs. Stuart Low & Co. is worthy of notice. L. crispa was one of the first Lælias cultivated in Great Britain, it having been sent to the Horticultural Society of London from Rio de Janeiro in 1826 by Sir Henry Chamberlain. The specific name alluded to the crisped nature of the petals and labellum. The sepals and petals are generally white, and the labellum streaked with purple. Historic interest is always attached to this species, for it was one of the parents of Læliocattleya exoniensis, the first Læliocattleya to flower, the event occuring in September, 1863. A coloured plate of Lc. exoniensis is given in Jennings'

Orchids (t. I), the characters being somewhat exaggerated. It is of interest to read what Jennings wrote in the descriptive matter to this coloured plate, the first one in the book, published in 1875. He remarks: "An apology is almost needed for giving precedence to a hybrid, and strict botanists might doubtless be inclined to demur at any mention whatever of such questionable characters in a scientific work. Doubtless such productions tend to the confusion of species and the utter mystification of the student; but facts are stubborn things, and hybrids are, some of them, truly magnificent facts. From a cultivator's point of view, any process by which a plant is improved, a fruit increased in size or flavour, or a flower enhanced in delicacy or depth of tint, is a step in the right direction."

ONCIDIUM HYBRIDS.—When reading the note on page 225 respecting the new hybrids that have been raised during the past three years, I could not help wondering why the genus Oncidium has not received more attention. It may be that considerable attention has been given. The difficulties always associated with the culture of these plants may have increased when attempting to produce hybrids in the genus. It seems to me that if once the first generation of hybrids could be brought to the flowering size, then future crosses could be made, and these would doubtless be of easier cultivation, judging by past experience in other genera. The colours seen in Oncidium are certainly attractive, especially the yellow, which is so characteristic of the genus that the mention of the word Oncidium is generally sufficient to bring this colour to the mind. During the above-mentioned period only a single Oncidium hybrid has been recorded, notably O. Burgeffianum (Marshallianum × varicosum), and this, in comparison to other genera, is rather a poor record. Surely, with all the interest now being taken in various methods of seed-raising, someone will give us Oncidiums that are likely to survive longer than the imported plants.—*W.G.*

STUDYING OUR ORCHIDS.—The Rev. E. Handley, when reading a paper before Fellows of the Royal Horticultural Society on July 12th, 1892, remarked that Orchids require attention, observation, and study, yet that study is full of interest, and leads the mind to inquiries into many kindred themes. Geography, so that we may know the nature of the climes from which our plants have come. Chemistry, so that we may understand the nature of their requirements in the way of food, by which plant-life is strengthened and sustained. Botany, by which we can trace the various great tribes to which they individually belong. But this involves much trouble! A hobby is not worth the name if it involves no trouble. Success would lose its sweetness if it were not the result of difficulties overcome.

ORCHID CULTURE IN THE UNITED STATES OF AMERICA.

THE collection of Edwin S. Webster, Esq., Chestnut Hill, Mass., is well worthy of inspection, for it contains many fine plants of Phalænopsis, several of which have been cultivated for over twelve years. Their vigorous condition does much credit to Mr. Peter Arnott, who has charge of this extensive collection. Calanthes are also well represented by a varied lot of hybrids, and these yield useful supplies of bloom in the dull winter months. Some specimens of Vanda tricolor and V. suavis are probably the finest of their kind at present cultivated in the United States; they remind one of the examples of this genus that were seen in old-time English collections, before the advent of hybrid Orchids in quantity.

Læliocattleyas meet with much appreciation on account of their free-flowering habit. Some of the early crosses are still popular, and a fine example of Lc. Dominiana produced a spike of five richly-coloured flowers in the month of May. A fine contrast is made hy the rich orange-yellow flowers of Lc. G. S. Ball, and also by those of Lc. Beacon, a recently named hybrid between Lc. luminosa and Lc. G. S. Ball. Another finely grown plant is Lc. Hyeana (L. purpurata × C. Lawrenceana), which came into flower just in time for the recent Boston Show, when its large and richly coloured labellum was much admired.

Dendrobiums of the nobile section made a pretty display during the early spring months, and a little later the Miltonias came into bloom and lasted through the month of May. A specimen plant of Miltonia vexillaria, with three well developed spikes of bloom, was awarded a Silver Medal as being the best example of this species in the Boston Show. M. Bleuana and the pretty M. Phalænopsis are cultivated with equal success. This collection contains a choice selection of Odontiodas, notable examples being Gladys, Madeline and Bradshawiæ, all of which yield many-flowered spikes of bloom that come in useful when scarlet and red tints are required. Among the Odontoglossums, a lovely hybrid is to be seen in lutescens, produced by crossing Lawrenceanum with Rolfeæ.

Cymbidiums are well represented, a very pretty pink tinge being seen in varieties of C. Alexanderi. A strong plant of C. Pauwelsii bore a spike of thirty large flowers, and many others were not far behind this standard. Cypripediums comprise many notable hybrids, including several of the Boltonii section. The foliage of these plants indicates that they receive correct treatment, for it is in an excellent condition of vigour. One other plant must not be forgotten, and this is Brassocattleya speciosa, a flower of delicate colour obtained by crossing Bc. Digbyano-Mendelii with C. Schrœderæ.

Mr. J. T. Butterworth.

A visit to the establishment of Mr. J. T. Butterworth, at South Framingham, Mass., afforded an opportunity of inspecting one of the oldest glasshouses existing in the United States. It was built as long ago as 1848, and although somewhat antiquated in design, it still proves of considerable utility. To-day it is filled with a splendid lot of Miltonia vexillaria, some 500 specimen plants, while another batch of this species, comprising quite as many, is cultivated in an adjoining house. These fine examples of cultivation have all been produced from two or three dozen plants obtained a few years back. Miltonia Phalænopsis is also cultivated with more than ordinary success.

Mr. Butterworth, who is a native of the north of England, well remembers Mr. R. P. Percival, of Southport, who in his time had one of the finest collections, and after whom Cattleya Percivaliana was named. Orchid species are largely cultivated at Framingham, and it is not to be wondered at that Mr. Butterworth takes special pride in a fine batch of C. Percivaliana. Of the numerous other Cattleyas grown for cut-flower purposes, there are large batches of C. Trianæ, C. labiata and C. Gaskelliana, the latter looking well up to its usual vigorous condition. Cattleya hybrids are well represented by a batch of 600 plants of C. Miss Williams (Gaskelliana × Harrisoniana), of free-flowering habit, Dusseldorfei, and many others that completely fill a large house.

Læliocattleyas are also grown in quantity, and a useful plant is found to be Lc. Epicasta, which always produces flowers twice in each year. A large batch of Cattleya hybrids received from England last year was immediately increased by dividing the plants, and growing them on as unflowered seedlings. By this means the stock of plants needed for the cut-flower trade will soon be obtained. The back-bulbs of all Orchids are here utilised for making further increases in the various sections, the difficulties experienced in importing plants being thus overcome, although in a much slower way.

Epidendrum vitellinum is one of Mr. Butterworth's favourite plants, and other members of the genus can be seen in E. cochleatum, and in strong examples of E. fragrans. Oncidiums are also well cultivated, and include masses of O. ornithorhynchum and its variety album, the graceful O. altissimum, as well as O. flexuosum, which is grown on sections of tree-fern. A plant that comes in well for cut-flower purposes at Xmas time is cultivated in Lælia Gouldiana. Numerous fine plants of the genus Phalænopsis yield an abundance of flower, and well repay any extra cost incurred in maintaining the high temperature enjoyed by this class.

Dendrobium Jamesianum made a very pretty sight with its masses of white flower, while D. nobile was also of considerable use in supplying

quantities of bloom. *Zygopetalum* Mackayi appears to be much in request, and probably the best lot of plants grown in the United States can here be seen. Chysis bractescens bore no less than a dozen of its wax-like flowers, quite an unusual number for this species, while Renanthera Imschootiana was in flower simultaneously.

Cypripediums are another feature of this establishment, and comprise immense quantities of C. insigne and insigne Sanderæ, also of insigne var. Harefield Hall. There are over 150 fine plants of C. Lawrenceanum, while among the noteworthy varieties mention may be made of C. Johnsonianum var. Mrs. Butterworth, a charming flower produced by crossing Lawrenceanum with nitens. Cymbidiums are also cultivated, eburneum and Lowianum concolor both proving useful subjects. Among the Odontoglossums, there is an extensive batch of citrosmum, of Rossii majus, and of crispum, the latter evidently meeting with suitable climatic conditions, for one of the spikes bore no less than 13 well-developed flowers. Vanilla fragrans, more generally known as V. planifolia, is here to be seen in the variety having variegated foliage.

REMOVAL OF SHADING.—Cultivators should take as much care in removing shading as is used in other details of the daily work. In the case of roller blinds, their use may be lessened as the sun gradually loses its power, each succeeding bright day being accompanied by shorter hours of shading, until the plants are sufficiently ripened to withstand the less powerful sunshine of autumn months. When permanent shading is in use, such as whitewash, a little at a time should be scraped or rubbed off, this being best done by treating one portion of the glass first, those plants that are still unfinished in their growth being kept in the shady part of the house, also those that habitually dwell in shady places.

PECULIARITIES OF ORCHIDS. — Orchids are strange plants; their peculiarities often take one a long time to fathom, which is the chief cause why the occupation of Orchid growing is so extremely interesting. To many a cultivator the great beauty of the flowers is but a secondary consideration. He becomes so deeply absorbed in their culture and general welfare, that in time the great fascination is to note how this or that plant behaves in a new position, or, in other words, to find out the exact conditions necessary for the culture of some Orchid which has hitherto baffled all attempts to keep it alive for long together, not to mention cultivating it successfully. The most experienced and skilful grower has plenty of scope in this direction, as there are many old and well-known Orchids which have yet to be actually conquered, in addition to strangers which are continually arriving.—*H. A. Burberry.*

CYPRIPEDIUM LEEANUM.

IN no other section of the Orchid family have so many hybrids been produced as in the genus Cypripedium. Further improvements in this popular flower come slowly, and it is only a very small percentage of the newer seedlings that are considered worthy of recognition by R.H.S. awards. But amongst the multitude of named varieties there are a few that hold their own firmly and remain popular with amateurs year after year.

Cypripedium Leeanum is an old favourite. It first flowered in 1884, having been produced by crossing C. insigne with C. Spicerianum. Both

CYPRIPEDIUM LEEANUM, A WELL-GROWN SPECIMEN.

parental species possess attractive qualities, and although insigne is with us to day in large quantity, Spicerianum is by no means so plentiful, in fact, it is a difficult matter to find vigorous plants of it in cultivation, while the fine varieties have almost entirely disappeared.

Like most other Cypripediums, the chief attraction of Leeanum lies in the dorsal sepal, the upper segment of the flower which by some amateurs is not unappropriately known as "the banner," for it generally displays coloured markings. The dorsal sepal of C. Spicerianum is white, with a vertical band of crimson purple in the centre. In C. Leeanum the influence of C. insigne is seen in the additional colour markings, which appear brightly on the clear white ground.

With a flower of such pleasing qualities, it is not surprising that C. Leeanum has been used by the hybridists to a considerable extent. No less than a hundred different crosses have been recorded with C. Leeanum as one of the parents, while many of these results have again been used in successive generations. Noteworthy cases are C. Hera (Leeanum × Boxallii), and C. Lord Wolmer (Leeanum × Hera). The practice of mating a hybrid with one of its parents is generally associated with favourable results, and while in C. Bruno (Leeanum × Spicerianum) there has apparently been nothing of a startling nature, the production of C. Actæus (Leeanum × insigne) has added many very pleasing varieties to the cooler-growing section of the genus, such, for example, as Actæus var. Bianca, obtained through the use of insigne Sanderæ, and also Actæus var. St. Alban, in which the two parents were insigne var. Harefield Hall and Leeanum Clinkaberryanum.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Corrientes	Bc. Ilene × C. Hardyana	Dr. Lacroze.
Brassolæliocattleya albanensis ...	Bc. Mrs. J. Leemann × Lc. bletchleyensis	Sanders.
Cattleya Aphrodite	F. W. Wigan × Alexandra	Flory & Black.
Cattleya Mona	Regina × Dowiana	Cowan.
Cypripedium Puck	Leeanum × Armistice II.	Mrs. Bruce, Miss Wrigley
Cypripedium Wintergreen	Zeno × Mastersianum	,, ,,
Dendrobium Aoyama	moniliforme × aduncum	Baron Iwasaki.
Læliocattleya Maisie	Lc. H. T. Pitt × C. Hardyana	Flory & Black.
Læliocattleya Marguerite Holroyd...	C. Warscewiczii × Lc. Maqueda	Mansell & Hatcher.
Læliocattleya Plumiecocq	C. Enid × Lc. Herscentiæ	Stuart Low.
Miltonia keighleyensis	vexillaria × spectabilis	Mansell & Hatcher.
Phalænopsis Asahi	Lindeni × Esmeralda	Baron Iwasaki.
Phalænopsis Tokyo	leucorrhoda × Stuartiana	,,
Phalænopsis Yoshino	amabilis × Sanderiana	,,

BRASSOCATTLEYA CORRIENTES.—Among the many fine hybrids that have been flowering in the collection of Dr. Miguel Lacroze at "Bryndir," Roehampton, mention may be made of a novelty produced by crossing Brassocattleya Ilene with Cattleya Hardyana. The former parent contains Brassavola Digbyana and Cattleya Warscewiczii, and the latter is the well-known hybrid between Warscewiczii and Dowiana. Size and colour are thus combined in a manner that promises much, judging from examples recently seen.

EPIDENDRUM NOCTURNUM.—This species was so named, its original describer tells, because, though scentless during the day, at night (like many other plants of a greenish or yellowish-white colour) it yields a very powerful odour, which he compares to that of the White Lily. To us, even by day, there is a faint smell resembling cucumber.—*Botanical Magazine*, 1834.

CYPRIPEDIUM CONSTANCE.

THE original form of Cypripedium Constance was raised in Mr. D. O. Drewett's collection, where it first flowered in the year 1890. The parents were Curtisii and Stonei, and, so far as records are concerned, this primary hybrid followed the usual course of events by yielding flowers intermediate in character.

CYPRIPEDIUM CONSTANCE.

Four years later, Messrs. Veitch produced the remarkable variety known as James H. Veitch, which had been raised through the use of Stonei platytænium. It was then justly described as one of the finest of all hybrids. The great breadth of petals peculiar to the celebrated variety of

Stonei was transmitted to the offspring. As seen in our illustration, the petals are developed to an astonishing extent, being nearly five inches in length and about an inch in breadth. In colour they are light yellow, evenly spotted with dark red-purple warts, except near the apices. The lip is helmet-shaped and almost uniform red-crimson with the infolded side-lobes paler but dotted with darker warts. It was exhibited at the Royal Horticultural Society, August 28th, 1894, when a First-class Certificate was awarded.

One would imagine that a plant possessing such distinctive characters would have been much utilised by the hybridists, but, strange to relate, not a single record can be found of its use as a parent, although thirty years have elapsed since its first appearance.

DENDROBIUM LÆVIFOLIUM.

A RECENT issue of the *Botanical Magazine* contains a coloured plate (t. 9011), of Dendrobium lævifolium. This plant was collected by Mr. J. C. Frost on Rossell Island, one of the Louisiades, an archipelago of small islands situated in the direct continuation of the south eastern-most point of New Guinea. It has been introduced to English gardens by Sir Jeremiah Colman, who states that in its native home it grows on moss-covered saplings, only 6-7 cm. in diameter, at an altitude of 360-450 m., and in a perpetually moist atmosphere.

D. lævifolium has much in common with D. asperifolium, and has, in fact, been several times exhibited under the latter name, but the structure of the leaf, and also the shape of the lip, affords sufficient character for specific distinction.

D. asperifolium "owes its name to the presence of small wart-like protuberances on the leaves, the receptacles and other parts. These are due to the enlargements of cell-groups after the manner of palisade-cells immediately below the epidermis; they are absent in D. lævifolium, whose leaves appear therefore perfectly smooth. Both species, however, possess the minute pits, and these require a few words of explanation. They are small funnel-shaped depressions in the epidermis which holds the basal cell of a minute hair that breaks down very early. Möbius, in a paper in vol. xviii of 'Pringsheim's Jahrbücher,' has fully described these hairs which according to him are typical of certain groups of Dendrobium, and may therefore be of some taxonomic value."

MR. A. G. ELLWOOD.—Many of our readers in England and the United States will learn with pleasure that Mr. A. G. Ellwood has joined the Directorate of Messrs. Charlesworth & Co.

ORCHID BOOKS IN THE UNITED STATES OF AMERICA.

WE are indebted to Miss Florence M. Thompson, of Laurel, Maryland, U.S.A., for the following useful and interesting information regarding Orchid books in the United States Libraries.

In the account of the recent exhibition of the American Orchid Society, which was published in the *Florists' Exchange* for May 17th, reference was made to the fine collection of rare books on Orchids belonging to Mr. Albert C. Burrage which he exhibited at that time. It may be of interest to readers of the *Orchid Review* to have a list of some of the important illustrated books on Orchids which are contained in the Library of the United States Department of Agriculture and some of the noteworthy ones in the Library of Congress.

In addition to the books that are herein mentioned, the Library of the United States Department of Agriculture has many others on Orchids which are not illustrated, or have illustrations only in the text. It is also impossible to note here the chapters dealing with Orchids which are contained in works on systematic and geographic botany, and the great number of articles on Orchids from scientific periodicals and other publications which are indexed in the botanical catalogue of the Library.

The following list, compiled by Miss Claribel Barnett, librarian of the U.S. Department of Agriculture, contains only the more notable works, the majority having coloured plates :—

AMES, OAKES. "Orchidaceæ," fasc., i.-vii., plates, Boston, 1905-22.

BAUER, FRANZ. "Illustrations of Orchidaceous Plants," 35 col. pl., London, 1830-38.

COGNIAUX & GOOSSENS. "Dictionnaire iconographique des Orchidées," 8vo, col. pl., Bruxelles, 1897-1907.

KRÄNZLEIN, FRITZ. "Orchidacearum, genera et species," Berlin, 1901-04.

LINDEN, J. J. "Pescatorea. Iconographie des Orchidées," folio, 48 col. pl., Bruxelles, 1860.

LINDLEY. J. "Sertum Orchidaceum," folio, 49 col. pl., London, 1838.

MOORE, THOMAS. "Illustrations of Orchidaceous Plants," 100 col. pl., London, 1857.

REICHENBACH, H. G. "Xenia Orchidacea," 300 plates, Leipsig, 1858-1900.

SCHLECHTER, RUD. "Die Orchideen," 242 illustrations, Berlin, 1915.

Other general works with coloured plates, contained in the Library of Congress, are as follows :—

BATEMAN, JAMES. "A Second Century of Orchidaceous Plants," 100 col. pl., London, 1867.

HOOKER, W. J. "A Century of Orchidaceous Plants," 100 col. pl., London, 1849.

SANDER, F. "Reichenbachia," 1st and 2nd series, folio, 192 col. pl., St. Albans, 1888-94.

WARNER & WILLIAMS. "The Orchid Album," 11 vols., 528 col. pl., London, 1882-1897.

VEITCH, JAMES. "Manual of Orchidaceous Plants," London, 1887-94.

Among the books dealing with Orchids of various countries, the following are of special value and interest:—

Africa.

BOLUS, HARRY. "Icones Orchidacearum austro-africanarum extra-tropicarum," London, 1893-11.

BOLUS, HARRY. "Orchids of the Cape Peninsula," Cape Town, 1888.

DU PETIT THOUARS. "Histoire particulier des plantes Orchidées recueillies sur les trois iles australes d'Afrique," 110 col. pl., Paris, 1822.

Asia.

DUTHIE, J. F. "Orchids of North-Western Himalaya" (Ann. Roy. Bot. Gard. Calcutta, vol. ix, pt. 2), 58 plates, Calcutta, 1906.

HOOKER, J. D. "Century of Indian Orchids" (Ann. Roy. Bot. Gard. Calcutta, vol. v., pt. 1), 101 pl., Calcutta, 1895.

KING, GEORGE. "Orchids of the Sikkim-Himalaya" (Ann. Roy. Bot. Gard. Calcutta, vol. viii.), 488 pl., Calcutta, 1898.

SMITH, J. J. "Die Orchideen von Java," Leiden, 1905-14.

Australia.

FITZGERALD, R. D. "Australian Orchids," vol. i., 67 col. pl., Sydney, 1875-82.

Europe.

BARLA, G. "Flore illustrée de Nice et des Alpes-Maritimes." "Iconographie des Orchidées." 63 col. pl., Nice, 1868.

MÜLLER, WALTER. 60 coloured plates of terrestrial Orchids, Berlin, 1904.

SCHULZE, MAX. "Die Orchidaceen Deutschlands, Deutsch-Oesterreichs und der Schweiz," 93 col. pl., Gera, 1894.

North America.

AMES, OAKES. "A Contribution to our knowledge of the Orchid Flora of Southern Florida," 12 pl. Cambridge, Mass., 1904.

AMES, OAKES. "Schedulæ Orchidianæ." Nos. 1-5. Boston, Mass., 1922-23 (includes Central America and Phillipines).

GIBSON, W. H. "Our Native Orchids," New York.

NILES, G. G. "Bog trotting for Orchids," 71 col. pl. New York, 1904. (Not all the plates are of Orchids).

Central America and Mexico.

REICHENBACH, H. G. "Beiträge zu einer Orchideen kunde Central America's." 10 pl. Hamburg, 1866.

BATEMAN, JAMES. "The Orchidaceæ of Mexico and Guatemala," Elephant folio, 40 col. pl. London, 1837-43.

South America.

COGNIAUX, A. "Orchidaceæ" (Flora brasiliensis vol. III, pt. 4-6, 372 pl., 1893-1906.

KRÄNZLEIN, FRITZ. "Beitrage zur Orchidaceenflora Sudamerika," 13 pl., Upsala, 1911.

There are also some popular accounts of Orchids and works dealing with their culture which contain coloured plates. Of this class the Library of the United States Department of Agriculture has the following:—

BOYLE, FREDERICK. "The Woodlands Orchids," London, 1901.

CURTIS, C. H. "Orchids for Everyone," 96 pl., London, 1910.

WILLIAMS, B. S. "The Orchid Grower's Manual," 7th ed., London, 1894.

The Library of Congress also contains the following of this class:—

MINER, H. S. "Orchids, the royal family of plants," 24 col. pl., Boston, 1884.

WATSON, WM. "Orchids, their Culture and Management," London, 1903.

Of the periodicals devoted entirely to Orchids the Library of the United States Department of Agriculture has:—

"JOURNAL DES ORCHIDEES," vols 1-7, Gand, 1894-97.

"LINDENIA," vols. 1-17, GAND, 1885-1906.

"ORCHID REVIEW," vols. 1-31, London, 1893-1923.

"ORCHIS," 1909-14.

"ORCHIDOPHILE," 1881-1892.

It also contains complete sets of Curtis's "Botanical Magazine, Edwards' "Botanical Register," and Hooker's "Icones Plantarum."

DISA GRANDIFLORA.—This species should certainly be grown by all, for it is a lovely Orchid. The cool Odontoglossum department should grow it well, if it had the very coolest and most airy part reserved for it during the winter months. It blooms during the present month, and makes a most striking feature whenever exhibited. Pot up early in September in sandy peat, and keep moist and shady for a month or six weeks, by which time it will have recovered, after which keep moderately dry and cool until spring, and then water liberally. Keep near the glass, but shade well, and keep perfectly free from thrip and green fly. If the tubers are large enough, it will be almost sure to flower.—*H. A. Burberry, August*, 1900.

CULTURAL NOTES.

ONE hears a lot about growing Orchids naturally, but a lot of the Orchids grown now are home raised, and the question is, what is natural for home raised plants? Should they be treated as imported plants used to be, or as ordinary stove or greenhouse plants whatever the temperature they require? I find they do much better treated more like other plants, and sprayed on every fine day, as we do our stove and other plants—not enough to make a lot of difference to the moisture of the compost they are potted in, but enough to keep the leaves clean and healthy. If they are given a little ventilation on every favourable occasion, one will not be troubled with spot or yellow thrip, and there is very little danger of leaves damping off if a little care is taken to keep the temperatures right. Keep a little higher rather than below the required figure, then everything will go right. Never syringe with a falling temperature, and always allow it to rise a little after ventilating, but do not rush the heat—keep it as even as possible, and then thrip and red spider will not be any trouble—*W. H. Morgan, Sept.*, 1908.

THE temperature in all departments should now be reduced by a few degrees to correspond with the reduced temperature outside. Let the thermometer in the East Indian House during bright sunny weather range between 75° to 85°; in dull weather between 70° to 75° will suffice; at night about 70°, and morning about 68°. The temperature for the Intermediate, Cattleya and Mexican Houses should be 70° to 75° with sun; without sun 65° to 70°; night about 65°, and morning about 60°. Of course, the thermometer will often indicate a higher degree when exposed to the influence of the sun, but it will do no harm; on the contrary, pure sun-heat is at all times to be courted, and is most beneficial when properly tempered by the admission of fresh air. Expose the plants to more light and sunshine by shading only when it is really necessary to prevent scorching, and pay strict attention to the matter of ventilation. Both light and air are indispensable in order to well ripen the newly-grown pseudo-bulbs. Twice a day will now be often enough to perform the operation of damping down if done thoroughly. The cool night air is a great invigorator to plants of the Cool House section, and must not on any account be excluded.—*J. Mackay, Sept.*, 1905.

THE advent of September reminds us that the summer is rapidly passing away, and that the winter is not far ahead. We must, therefore, take steps to meet the latter by losing no opportunity of preparing our plants to resist the evil influences of the short, cheerless days, and long, cool nights which are then inevitable. This can only be accomplished by treatment which will tend to harden or ripen the new growth, a process which, for obvious reasons, must be gradual in order to be effective. To suddenly

expose tenderly matured exotic plants to large volumes of air, or to great drought, would, of course, be courting disaster.

We must, therefore, not allow the present month to pass by without giving all the air and light that is possible, at the same time gradually curtailing the supplies of water, both at the roots and in the atmosphere, for there are already a large number of Orchids of various species which have finished their growth and require only to have the same properly matured. Such plants as Dendrobiums and similar kinds, which make up their pseudo-bulbs quickly, as, for instance, Thunias, Pleiones, Cœlogynes, Mormodes, Cattleyas, etc., might be removed to another department, such as a vinery, and there be treated for the next five or six weeks with advantage. But, if no such convenience exists, they must remain in the department in which they have grown, and where a good many other species are still growing; which latter, although rejoicing at this season in more light and air, would not relish *quite* so much as the vinery would afford. Under such circumstances, one must proceed with care, and a way out of the difficulty may easily be found by placing those requiring most air and light near the roof and against the ventilators, and those liking more shade and moisture in correspondingly favoured positions, and all will then proceed merrily.—*H. A. Burberry, Sept.*, 1898.

DENDROBIUMS are now rapidly finishing up new pseudo-bulbs. It is most essential that these Orchids have complete rest during autumn and winter, in a much cooler temperature than that in which they make their growth. Upon this much will depend in the successful cultivation of this most beautiful genus. The spring flowering kinds, such as D. Wardianum, D. crassinode, D. Falconeri, D. Devonianum, D. aureum, and D. nobile, with many other species and hybrids which flower only after resting, should, after completing their season's growth, be removed to a department offering similar conditions to the Mexican house, where they should remain through the winter months. Upon their removal the supply of water should be gradually lessened, and in a month or two's time a very little water indeed will be found necessary to keep the plants quite plump and healthy.—*J. Mackay, September*, 1904.

EAST INDIAN HOUSE.—The temperature here should also be lowered by a few degrees, and damping down twice daily should now be sufficient. Use no more warmth from the hot-water pipes than is necessary to maintain the requisite degree of heat, for to have more than is really necessary is most injurious to the plants, and quickly reduces their health and vigour. Saccolabiums, Angræcums, Phalænopsis, Aërides, and Vandas will now have partially finished their season's growth, which of course requires to be matured to a certain extent, and therefore the supply of water at the roots must be slightly reduced, so that they may prepare for the coming winter.

They should also be less heavily shaded, but it must be reduced very cautiously, for it must be remembered that Orchids of this class, having no pseudo-bulbs, have to rely on their handsome leaves, not only for their appearance, but their strength also, and therefore the leaves should be preserved intact as long as possible. A sudden and protracted exposure to strong sunshine, or an excessive drought, before these new leaves are somewhat matured, may therefore do an immense amount of damage.—*H. A. Burberry, September*, 1899.

MASDEVALLIAS.—Many of these, when well grown, are very decorative, and all are most interesting, and although they, like many other varieties, have not been very popular of late, there is every reason to believe they will again be extensively grown. The present season is a most suitable one for giving the plants a thorough overhauling, potting those that require it, and surfacing others that are in a sound state, using a compost of good fibrous peat and sphagnum in equal parts, with plenty of coarse sand and small crocks. Ordinary pots are quite suitable for such as can be accommodated in one not more than seven inches in diameter, but larger plants will look better if they are given fairly deep pans, and if these have no side perforations so much the better. Give a good drainage, first placing a few crocks over the aperature, then a liberal amount of bracken rhizomes, deciding the quantity by the amount of roots each individual plant has. Some varieties are much deeper rooting than others, which should be borne in mind when deciding the quantity of drainage.

Whenever a plant shows signs of decay in the centre it is quite time it was pulled apart, and the decaying portions removed. The outer parts can then be remade into a specimen or potted up separately, at the grower's discretion. When it is desirable to rebuild a specimen, be quite sure there is some compost between each section. If the plant is not a large one, it can be built in the hand, and potted just as if it was one plant. By this means the plant can develop all ways. Plants that are in a thoroughly sound state and have reached the edge of the receptacles will be benefited by being given a shift into a larger pot, but it is better to err on the side of too small pots rather than to over-pot, as during the winter months they resent being in a wet state for any length of time. When a large receptacle is used for a comparatively small plant the bulk of the material takes too long to dry after being watered, and much harm accrues. If on the other hand the plant has made a great deal of root, and is not afforded some fresh material and more root room, the leaves will present a sickly yellow appearance, and the flowers will not be up to the standard, so this, like many other matters relating to Orchid culture, must be left to the individual to decide between plant and plant. After potting, water must be very carefully given.—*W. P. Bound, September*, 1907.

ROYAL HORTICULTURAL SOCIETY.

August 12th, 1924.

MEMBERS of the Orchid Committee present:—C. J. Lucas, Esq., (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, Ernest R. Ashton, T. Armstrong, H. T. Pitt, John C. Cowan, Charles H. Curtis, Frederick K. Sander, A. Dye, Henry H. Smith, A. McBean, and Frederick J. Hanbury.

Award of Merit.

Odontonia Joiceyi (Odontioda Pittiæ × Odm. Tityus), from Messrs. Charlesworth & Co. A further step in the production of the large-lipped flower, obtained by combining Miltonia Bleuana with selected Odontoglossums. In this example, the immature plant bore a large flower, the sepals and petals heavily marked with rose-purple, the expansive labellum rose-flushed and marked with purplish blotching. The yellow crest bearing reddish lines.

Groups.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood) was awarded a Silver Banksian Medal for an effectively arranged group containing Catasetum fimbriatum, the pretty Cirrhopetalum miniatum, with minute reddish flowers, Angræcum Scottianum, fine examples of Phalænopsis amabilis and Cœlogyne speciosa, as well as the blue-flowering Zygopetalum Gautieri, and the rare Microstylis Reedii. In the centre was the superb Vuylstekeara Memoria Joseph Charlesworth, with flowers of intense reddish-purple colour.

Messrs. Stuart Low & Co. received a Silver Banksian Medal for an exhibit containing the elegant Cattleya Hardyana alba, C. Dupreana, with a spike of three large flowers, C. Eira (labiata × Thurgoodiana), with a spike of four richly-coloured flowers, and Cypripedium Harrisianum superbum. Brassavola hybrids were represented by fine examples of Brassolæliocattleya Ilene, of soft rose colour, Bc. Olympus, and Brassolæliocattleya Ancona, with a spike of golden coloured flowers, obtained by crossing Bl. Jessopii with Lc. luminosa. Another attraction was staged in Lc. Clarilaw (Lc. Helius × C. Schrœderæ), with flowers of clear yellow colour.

Messrs. Cowan & Co. were accorded a Vote of Thanks for a small, but select, exhibit of Cattleya Hardyana alba, C. Venus, with greenish-yellow segments, the labellum ruby-crimson, and the new C. Mona, obtained by crossing Regina with Dowiana aurea. An attractive plant was seen in Læliocattleya Hassallii alba, with three finely developed flowers, and another in Lc. J. J. Ansaldo. The central object was a superb variety of Brassia brachiata, bearing a spike of eight immense flowers, probably the finest form seen of this Central American species.

MANCHESTER ORCHID SOCIETY.

July 25th, 1924.

MEMBERS of the Committee present:—Rev J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, J. Evans, J. Howes, J. McCartney, E. W. Thompson and A. Coningsby, the latter acting as Secretary in the absence of Mr. Arthur.

FIRST-CLASS CERTIFICATES.

Cattleya Annette, West Point var. (chocœnsis alba × Warscewiczii var. F. M. Beyrodt) from S. Gratrix, Esq.

Lycaste macrobulbon var. Youngii; from Mrs. Bruce and Miss Wrigley.

Stanhopea tigrina; from P. Smith, Esq.

AWARDS OF MERIT.

Odontioda King Manoel, Oda. Brewii colossa, and Odontoglossum St. George var. Blue Bird; from S. Gratrix, Esq.

Odontoglossum eximium var. Beaute Celeste; from Mrs. Gratrix.

Odontioda Brewii rubra; from P. Smith, Esq.

CULTURAL CERTIFICATES.

Mr. A. Burns, for Lycaste macrobulbon var. Youngii, L. tricolor albens, and Anguloa Ruckeri.

Mr. J. Howes, for Odontodia Brewii colossa, and Oda. Hiawatha, West Point var.

Mr. A. Coningsby, for Dendrobium Sanderæ.

OTHER EXHIBITS.

S. Gratrix, Esq. (gr. Mr. J. Howes), received a Silver-gilt Medal for an exhibit of Odontoglossums in variety, choice Odontiodas, and various Cypripediums.

Mrs. Bruce and Miss Wrigley exhibited Catasetum Bungerothii, a handsome species not often seen in perfection, Anguloa Cliftonii, and the rare Dendrobium laevifolium (asperifolium).

P. Smith, Esq., Ashton-on-Mersey, staged Cypripedium Maudiæ coloratum, produced by crossing the normal forms of callosum and Lawrenceanum.

Capt. W. Horridge, Bury, exhibited Miltonia vexillaria var. Lambeauiana, and the rare Dendrobium Sanderæ.

R. Ashworth, Esq., Newchurch, sent a fine cut spike of Cœlogyne pandurata.

MANCHESTER ORCHID SOCIETY. — Meetings of the Society were suspended during the month of August. The next meeting will be held at the Houldsworth Hall, 90, Deansgate, Manchester, on Friday, September 5th, when the Committee will sit at 12 o'clock.

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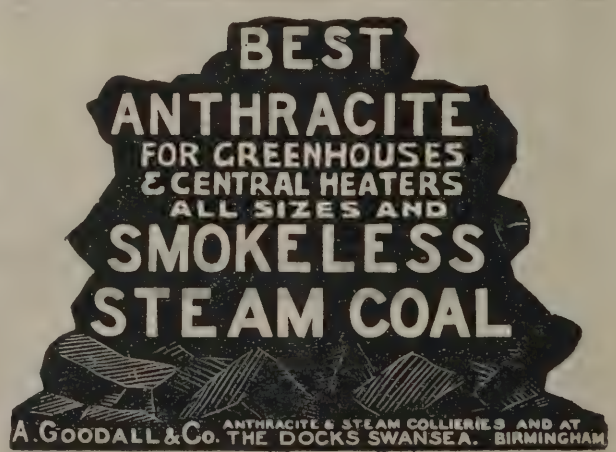

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THE ORCHID REVIEW.

VOL. XXXII.] OCTOBER, 1924. [No. 376.

NOTES.

ATTRACTIVE PROPERTIES OF ORCHIDS.—I do not believe that the taste for Orchids among our garden-loving people will readily pass away. The beauty, the scent, the inexhaustible variety of their flowers, their peculiar and diversified habits of growth and flower production, the singularity and scientific interest of the methods of fertilisation, the winter flowering properties of many—these qualities and circumstances bid fair to give a prolonged vitality to the taste for Orchids.—*Sir Trevor Lawrence, Bart.*

MR. ARTHUR N. COOLEY.—We much regret to have to record the death, which took place on August 5th, of Mr. Arthur N. Cooley, of Pittsfield, Mass., who owned one of the finest collections of Orchids in the United States. At the recent Boston Show his group of plants, staged by Mr. Oliver Lines, was of outstanding merit, the excellent quality of the numerous varieties being a noteworthy feature. Mr. Cooley, who was in his 68th year, had been in poor health for some time past, but pneumonia developed and the end came suddenly. The casket containing his remains was covered with the flowers he loved so well.

THE ORCHID AS A BENEFACTRESS.—To the several qualities upon which the Orchid can base its claim to recognition and value—such as rarity, exotic beauty, delicacy of colouring, wide variation in form and cultural interest—there can now be added another, thanks to the research work of scientists in a new and unusual field. A Dr. Rous of Paris, according to a recent despatch to the New York *Times*, has discovered that certain essential oils obtainable from the Orchid flower and injected into a person suffering from tuberculosis will aid him considerably in his fight against the disease. In other words, this erstwhile luxurious beauty of the plant world has now shown its ability to take off its coat, so to speak, roll up its sleeves and take an active part as an effective weapon in the war against the White Plague. All honour to the Orchid, new found benefactress of humanity

and to modern science, which has revealed it in this new rôle.—*The Forist's Exchange, U.S.A., August 9th,* 1924.

WILD ORCHIDS IN GUIANA.—A realistic picture of the conditions under which wild Orchids flourish in Guiana was given some years ago by Sir Everard im Thurn (R.H.S. *Journal*, xxii, pt. 1). He thus described the scene: "Passing out of the sunlight, through one or other of the tree arches which close the two ends of this open space, one passes at once into a quite different scene. Here in a twilight which never brightens into daylight, the curiously twisted and buttressed tree-trunks, seldom of any great size, rise from banks of black leaf-mould over which the ground vegetation is rank yet sparse. The trees meeting over the creek, lift almost all their leaves to the sunlight, while under the dense roof thus formed their own trunks and branches are swathed with Mosses and Lycopodiums and Pepperworts and Aroids, and with curtain-like masses of pendent Orchids."

MAXILLARIA, HABIT OF.—Sir Everard further remarked that "the most characteristic Orchid of the pendent habit above alluded to, is a caulescent Maxillaria, which occurs in two closely allied but easily distinguishable forms. In both, the long and wiry rhizomes and much-sheathed pseudo-bulbs carry long grassy leaves and stalked white or whitish flowers, individually beautiful and still more beautiful in the mass, which, by a not inapt comparison, are sometimes familiarly spoken of in the Colony as 'snowdrops.' I notice that in books Maxillarias of this habit are generally written of as 'scandent,' but the natural habit is certainly not scandent but pendent."

CYMBIDIUM MIRANDA.—A large photograph showing a grand plant of Cymbidium Miranda bearing no less than eight many-flowered spikes has been received from Mr. J. T. Butterworth, of South Framingham, Mass., U.S.A. C. Miranda is the result of crossing C. Alexanderi (eburneo-Lowianum × insigne) with C. Lowio-grandiflorum, and thus contains the four species eburneum, insigne, grandiflorum and Lowianum. It was first exhibited by Lieut.-Col. Sir George Holford, K.C.V.O., in whose collection at Westonbirt it had been raised by Mr. H. G. Alexander, the first flowers being seen in 1916. Of the many beautiful varieties that have since appeared, the majority possess a creamy-white ground colour, more or less tinged with yellow, while the broadly expanded labellum bears reddish-purple markings. The specimen brought to perfection by Mr. Butterworth yields further evidence of the great utility of Cymbidiums, not only as excellent plants for the greenhouse, but as suitable subjects for the cut-flower trade.

THE PAST AND THE PRESENT.

THE so-called good old days when Orchid species were imported in tens of thousands often brought to mind the thought that the native homes of these plants would soon be laid bare. In fact, it was no uncommon event for the sale catalogues to contain statements to the effect that as every available plant had been collected, no further importations could take place. In other words, the species in question should be considered as extinct in its original locality.

In the early days, Stevens' Auction Room was the periodical meeting place for Orchid folk, and many reminiscences still linger in the minds of our older amateurs Reichenbach was, of course, acquainted with the large importations that were being received about half a century ago. In the *Gardeners' Chronicle*, 1879, p. 266, he remarked of Odontoglossum maculatum : " I suppose this comes from Rœzl's introductions by myriads, so that the American Government may present lysend their representatives to Mr. Stevens' Rooms to get something back, so as to save, if possible, the species." In view of the great difficulty now experienced in obtaining permits for sending Orchids to the United States, it does not seem likely that representatives of the American Government will come over personally to procure the plants. Reichenbach's prophecy will consequently remain unfulfilled, at least, during the life-time of present amateurs.

My Orchidic friends, thus were rival growers of our favourite plants referred to in the past. Plants were also described as being of Orchidic beauty, and the Orchidic world was no uncommon term. Later on, the word Orchidist became popular. Odontoglossum Rossii rubescens has been described as one of the most glorious sights an Orchidist's eye could witness. But there are other words of apparently later origin. When, in May last, at a social dinner party consisting of members of the American Orchid Society, the President asked if Orchidophiles could be distinguished from Orchidologists, the most satisfactory answer to the question was given by one of the Vice-Presidents, who remarked that while the former term denoted Orchid lovers, the latter more correctly described those who scratched beneath the surface of things to discover the why and the wherefore ; in reality, the scientific workers.

Going back to the year 1845, when Henshall published his Select Catalogue of Orchidaceous Plants, it is of interest to note the Odontoglossums included therein. They comprised citrosmum, Cervantesii, grande, maculatum, pulchellum and Rossii. Henshall described the genus as a beautiful one and well deserving cultivation. What adjectives could be used to-day in describing the present state of the genus! The treatment of Odontoglossum grande was evidently well understood, for the

author mentions a specimen having as many as nine spikes of flowers, with five or six flowers on each. It is a noteworthy fact that the finest specimens of O. grande seen at the present time are almost invariably in the small amateurs' collections, and it is with this species, probably more than any other, that amateurs surpass the plants cultivated by the leading trade-growers.

Of all flowers, Orchids are particularly difficult to describe as regards colour. Ask half-a-dozen people to describe the colour of a certain hybrid of much-mixed parentage, and each opinion will differ. Thus it comes about that the reporters use the rather indefinite terms wine-colour and claret-purple, rather than expose themselves to correction by calling certain flowers purple or red-purple, when they are not exactly sure of that descriptive colour. But if the present-day reporter is criticised for unduly using the word claret as descriptive of a certain colour or tint, he might revert to coffee-colour by way of a change. Fifty years ago Reichenbach described Oncidium Carderi as of "light coffee colour, the petals half white." But he further remarked: "I feel certain doubts as to the brown of coffee colour, since it is very doubtful whether the allusion goes towards the roasted bean, or towards that dreadful beverage of chicory and a few coffee beans that is drunk so much in England."

Orchid houses of to-day are generally specially constructed for the well-being of these particular plants, and it is an acknowledged fact that the cultural results are eminently superior to those witnessed in days gone by. But occasionally one hears of plants that succeeded uncommonly well in houses of the old fashioned type, and it is not improbable that the conditions, such that were brought about by early methods of heating and ventilating, were specially suited to a few kinds of Orchids. Let us go back but thirty years and note the conditions under which Mr. E. H. Woodall cultivated Vanda cœrulea, of which fine specimens are rarely seen to-day. In a paper read at the meeting of the Royal Horticultural Society, October 9th, 1894, this amateur stated:—

"I have had great success the last five years with this Orchid. In March when our Muscat vinery is first shut up and the vines syringed, I put my baskets of Vanda cœrulea on a shelf near the water-tank, and close to the lower ventilators. Here they are treated just like the vines, and are syringed well every day. As the sun gets hotter the vine-leaves grow, and by degrees the Vandas get heavily shaded; while in summer, when the vines have abundance of air both top and bottom, they are in a perfect gale of wind in our exposed garden when west winds are blowing. Here they flower gloriously in August, September, and October; and I much regret that my fine old specimen, that had eight long spikes on it, with flowers five inches across, and of the loveliest shade of tender-blue, is now past its

best, for I had hoped to have shown it to you as the result of five years' growth.

"In November, when the Chrysanthemums are in this house, I think it wise to put the Vandas in more warmth till the sun is gaining new power in the first days of February. I then hang them up near the ventilators in a little span-roofed house where we grow Carnations, Geraniums, Primulas, and such plants. They are kept very dry now, having been gradually allowed to rest through the dark days, and, unless they shrivel, I do not give them water at all, as I find the one essential is a perfect and somewhat prolonged rest in cool, dry air. To see the way these yellow sun-burned leaves turn green and fresh, and to see the vigorous young roots push, when, in spring, these baskets, after being re-surfaced and dressed with fresh fern-root and moss, are placed anew in the genial atmosphere of the vinery, is a delight to a gardener who likes to see his plants happy; and though I should fear 'spot,' which comes from damp and airlessness, I do not mind a little shrivelling or yellowing of the leaves in early spring, knowing well how necessary this cool, dry rest is to their well-being and free-flowering later on. I need hardly say this is especially an Orchid that needs a pure air and a clear sky in winter.

Brassonia.—The genus Brassia is closely allied to Miltonia, and one day some enterprising hybridist will produce a new bigeneric cross embodying the characters of both. A new descriptive word will then be necessary, and Brassonia (Brassia × Miltonia) is suggested as suitable.

Orchids of the Upper Irrawaddy.—The last issue of the Royal Horticultural Society's *Journal* (vol. xlix, pt. 2), contains an article by Mr. F. Kingdon Ward on "The Flora of the Upper Irrawaddy." The total area drained by the two branches of the River Irrawaddy is, in round numbers, 25,000 square miles. The whole of this great region is covered with dense forest. Mr. Kingdon Ward states that "at 7-8,000 feet, festoons, sometimes 30 feet long, of the lovely Rhododendron Edgworthii drape the big trees. Lower down the Orchids abound. Every tree is smothered with them, including species of Vanda, Saccolabium (mats of S. gemmatum in alder trees, where the forest is open and park-like), Dendrobium (found even on pine trees, with whose arid trunks the gay flowers contrast curiously), Bulbophyllum, Cœlogyne longipes, Tainia minor, Cirrhopetalum Farreri with brick-red flowers, Habenaria corticicola, and the striking new species H. ophiocephala, with its sack-like spur nearly three inches long, containing honey. We know little about Orchids of the Upper Irrawaddy region as yet, and there are doubtless hundreds of species to be discovered there."

NEW ORCHIDS.

A RECENT issue of the *Kew Bulletin* (1924, No. 5) contains descriptions of the following new Orchids:—

Pleurothallis cardiocrepis, of unknown habitat, described from a plant received at Kew in 1887, from Mr. B. S. Williams as P. tridentata. It has been known at Kew for a number of years as P. cardiocrepis, but no description appears to have been published. Exceptionally free-flowering.

Pleurothallis carnosa, of unknown habitat. The history is not known. It has been cultivated for many years at Kew. Flowers, produced in late autumn, are of a reddish-brown colour with a dull-red lip.

Pleurothallis fuscata, of unknown habitat. The plant was received in 1885, from Messrs. Shuttleworth, Carder & Co., and although it has flowered freely since, it has not been identified. Flowers are greenish-yellow suffused with red along the veins of the sepals and petals.

Pleurothallis nervosa, from Costa Rica, at 4-5,000 feet elevation. The plant was received from Mr. C. H. Lankester in 1913, but did not flower until 1923. The flowers are described as reddish-green-brown with a darker, red lip.

Bulbophyllum cæsariatum, from Lower Siam. Allied to B. penicillium of Burma, but the flowers and rachis are more hairy and the flowers more distinct.

Ione purpurata, from Siam, where it was collected by Dr. Arthur Kerr. It has close affinities in Ione Andersoni and in Ione flavescens. It is distinguished easily by its size, the spreading sepals and petals, and its colour. The lateral sepals are markedly boat-shaped and are slightly connate.

Eria Brownei, from Chin Hills, Burma, where it was collected by Major St. John A. Browne. This plant is said to, at first sight, suggest a large variety of Eria alba, Lindl., but the pseudo-bulbs are much larger and of a different build, and the whole plant is more robust and floriferous.

Eria citrina, from Borneo. Mr. Ridley states that he got this pretty Eria from a native dealer at Singapore in 1893, but never described it. The plant has been referred by Dr. J. J. Smith and Mr. R. A. Rolfe to E. Sonkaris, Reichb. fil., of which there is a type specimen in the Lindley Herbarium, but which is now said to be a totally different species, with flowers not half the size.

Spiranthes Pamii. The plant was found at Buenos Aires and forwarded to Kew by Major A. Pam, in 1923. It resembles S. alpina, Rodr. or S. bicolor, Lindl., but the lip is quite distinct. Over thirty were in flower together, so it was possible to note three of the forms which vary from the type specimen. These are varieties bruneolus, of brownish colour; spiralis,

which differs from the type in not possessing all secund flowers; and brevipetiolatus, which differs from the type in its petioles being short or wanting.

Stenorrhynchus bonariensis, from Buenos Aires. Described from a plant collected by Major A. Pam. The noteworthy points are the colours of the flowers, apple-green edged or lined with white on the sepals, petals, and epichile; the white lines on the ovary, the bright-green median lines on the petals and epichile; the orange-yellow, thick, fleshy mesochile; the blue gland to the pollinia; the winged column, and the crenate edges to the petals and epichile.

Epipogium aphyllum.—This very rare species is the subject of a note in the *Journal of Botany* for July, by Mr. A. J. Wilmott, who states that: "As this is almost the only British species not represented in the National Collection of British Plants, it is hoped that any discoverer will present a specimen or photograph to the Natural History Museum. The plant, which very rarely flowers, was found during the month of June, in an old beechwood in Oxfordshire." A full account of the find was published in the *Gardeners' Chronicle* of August 16th. Mr. Wilmott further states that: "the past year has been a wonderful year for saprophytes, Monotropa, Neottia, and Corallorhiza, all being remarkably abundant and luxuriant."

Odontoglossum citrosmum.—Anyone accustomed to seeing this Mexican species under cultivation in England will be somewhat surprised at the fine results achieved in the United States. English growers seem only able to obtain flower spikes by severely drying the plants during the winter months, and to a degree that generally brings about much shrivelling of the bulbs. In the collections of the United States this species is grown by the hundred, and long rows of plants can be seen in pans and shallow pots suspended near the glass. These plants are each composed of several full-sized bulbs, without the least evidence of shrivelling, and of a robust nature that would more than satisfy European cultivators of Colombian Odontoglossums. Flowering results are equally satisfactory, and it is no uncommon event for two spikes to be produced simultaneously from the same new growth during the early months of the year. It may be that English growers shade their plants too heavily during the summer months, for as a native of Mexico this species must receive a considerable degree of bright light. We should like to hear of some amateur with a dozen or more plants who would like to give bright-light treatment to half of them, and shady conditions, such as the Odontoglossum house, to the remainder, and then await the flowering season without unduly drying off the plants.

FURTHER NOTES ON THE UNDERGROUND DEVELOPMENT OF SPIRANTHES ROMANZOFFIANA AND S. CERNUA.

By HENRY MOUSLEY.

IN an interesting paper on "New England Orchids," by Prof. Oakes Ames, in *Rhodora*, April, 1921, we find the following remarks on the genus Spiranthes: "Spiranthes is the most perplexing Orchid genus in our flora. It is the least understood and one that furnishes to authors who grow impatient under the restraints imposed by cautious progress, the best opportunities for the multiplication of species. It is a genus that repays intensive observation in the field and prolonged contemplation in the herbarium." Possibly, since these words were penned, few, if any, have had better opportunities of proving their correctness than myself, more especially as regards the remarks concerning intensive observation in the field, as may be gathered from the present paper, and that in the *Orchid Review* of March, 1924. To many, the account there given of the underground development of Spiranthes Romanzoffiana may have seemed conclusive enough, but, to the author, there still seemed something hidden behind the scenes which called for further investigation. I refer to the fact that, if no more than two new tubers were developed each season, was it possible that plants, when growing under such wet conditions as at Hatley, could be found with twelve tubers in such a state of preservation as depicted in figs. 1 and 6 of the afore-mentioned paper?

The solution of this problem came somewhat suddenly and unexpectedly, from the further study of another species, S. cernua, which, it will no doubt be remembered, I have already touched upon, pointing out that it differed from S. Romanzoffiana in not having produced any new tubers by November 29th, 1923, whereas the latter had developed two, which, at that time, and as far back as 1810, were considered to be the full quota for any one season.

In the spring of 1924, S. cernua was kept under constant observation, but it was not until May 24th that the two small tubers which had appeared in the case of S. Romanzoffiana in the autumn had come into evidence. Now these plants, one of which may be seen in fig. 2, were growing in a damp situation, but not in such wet and slimy ground as S. Romanzoffiana It then occurred to me to examine some plants of the variety ochroleuca of S. cernua, a form which usually grows in higher and drier ground than the species. Imagine my surprise when, on May 26th, I found the plants of this variety all had three and in some cases four tubers developed, as in fig. 1, and moreover, instead of these growing out at right angles to the flowering stem, as in S. Romanzoffiana previously depicted, and also in S. cernua, fig. 2, it will be seen they have taken an immediate and

decided downward trend. After this discovery, I decided on June 4th to visit the plants of S. Romanzoffiana growing on the high and dry ground at Coaticook, about nine miles to the east of Hatley, and already alluded to

SPIRANTHES CERNUA VAR. OCHROLEUCA (FIG. 1); S. CERNUA (FIGS. 2, 3); S. ROMANZOFFIANA (FIGS. 4, 5, 6).

in my previous paper. Judge of my still further surprise to find that most of these plants had developed three and four tubers, and in one case six, as depicted in fig. 5, which like those of the variety ochroleuca of S. cernua

had the downward trend. Moreover, the old tubers were found on the whole to be of a much thicker nature than those growing in the wet slimy ground at Hatley, and apparently more like the South Irish forms as previously pointed out, and this was the case also with the tubers of the variety ochroleuca of S. cernua, as compared with those of the species growing in the damper ground.

At this point it may be well to mention that before journeying to Coaticook in the afternoon of June 4th, I examined that morning a large number of plants of S. Romanzoffiana growing in the wet ground at Hatley, but only found one plant with three new tubers. Not satisfied with this, I made yet another search, on July 2nd, but here again I met with only one plant, fig. 6, but this bore four new tubers instead of three, all of which, together with those of the previous plant, I was surprised to see had the downward trend, as may be seen in the illustration. During this latter search, I incidentally came across three plants, one of which is depicted in fig. 4, with tubers equalling in thickness those found in the dry ground at Coaticook, an unusual occurrence, as most of the tubers of the plants growing in the wet ground at Hatley are of a slender nature, which fact has been commented upon in letters to me by Col. M. J. Godfery and Dr. Stephenson.

It seems to me that the solution of this, and all the other problems now involved, may be found in the fact that tubers are really little reservoirs for the plants to draw upon in times of strees. This is well exemplified in an interesting paper on Pogonia (Triphora) trianthophora by Albert E. Lownes in *Rhodora*, vol. xxii., 1920, from which the following extract is taken: "An interesting experiment proved that the plant is able to withdraw moisture from the tubers in time of drought. A colony of plants was dug up on August 21st, 1918, in order to photograph the tubers. It was placed on a table inside a building and left without water and with the tubers exposed. Two weeks later (September 5th) the plants were as fresh as ever, but the tubers had shrunk and shrivelled to a fraction of their original size."

Looking to the above fact, I think I am justified in the case of Spiranthes Romanzoffiana and S. cernua in drawing the following conclusions:—

(1) That in the case of S. Romanzoffiana growing in very wet ground, as at Hatley, there would be no necessity for the plants to develop many, nor yet very thick tubers, and so we find that as a general rule two new tubers are developed each autumn, as described in the *Orchid Review* for March, 1924, which number I have since discovered may be increased to three or four in the spring, these tubers in nearly all cases being of a slender nature. When occasionally found to be stouter (fig. 4), and four in number (fig. 6) for any one season, it is no doubt owing to an extra robustness of the plant, and to the fact that it is growing in a somewhat drier situation to

the rest. That these tubers should invariably be found growing out at right angles to the flowering stem, as depicted in the *Orchid Review* for March, 1924, may be accounted for by the soft nature of the ground, which is conducive to a spreading, rather than to a bunching of the tubers.

(2) That in the case of S. Romanzoffiana growing on high dry ground, as at Coaticook, it would be highly necessary for these plants in time of drought to be able to have some reserve to draw upon, and so we find an increased tuberisation as a rule, most of the plants having three and four new tubers each season, which, naturally, also are of a stouter nature than those of plants growing in wet ground. Any plants like fig. 5, developing as many as six new tubers in a season, are no doubt uncommon, and are due probably to an exceptional vigour and robustness of the plant. That these tubers should grow downwards, rather than outwards from the flowering stem seems only natural, the dry nature of the ground inducing this form of growth and bunching, rather than a spreading of the tubers. This is the case not only with the variety ochroleuca of S. cernua, but also with the species (fig. 3, June 6th), when it grows in dry ground, as well as with S. gracilis, another species, found here somewhat sparingly, which favours dry situations, and whose tubers, although small, are numerous, thick, and bunched together.

(3) That in the case of S. cernua growing in damp situations the same remarks apply as to S. Romanzoffiana growing under similar conditions, except that S. cernua develops its two new tubers (fig. 2) in the spring, instead of in the autumn. Like S. Romanzoffiana, plants, even when growing in damp situations, can be found at a later date to have developed an extra one or two tubers for the season. In fact, I especially selected the plant figured as No. 2, because it shows a third tuber in the form of a knob or swelling only, exactly half-way between the other two small tubers, but which will eventually develop before flowering time, and become the third tuber of the season for this particular plant. When plants of S. cernua (fig. 3) grow in dry ground, as does the variety ochroleuca, the same remarks hold good for both, as for S. Romanzoffiana, except that I have never found a plant of either with six new tubers for the season, the most being four, which number I consider the normal maximum for the two species and variety under discussion.

From these further studies it will be seen that in special cases two and in ordinary ones three years need only elapse for a plant to have twelve tubers in evidence, instead of six years, as previous investigations indicated.

With a view of subsequently presenting the Herbarium at Kew with specimens of S. Romanzoffiana from all the localities around here, I visited Coaticook as recently as yesterday, August 13th, 1924, and was fortunate in finding a specimen with the broadest leaves and thickest tubers I have ever

seen. The former in one case measured 19 mm. in width, and the thickest of the five tubers was 9.5 mm. throughout its entire length of 7.5 cm. The height of the plant was 27.5 cm., and the five leaves averaged 10.5 cm. in length. It would be interesting to know if anything approaching this abnormal plant has been recorded from Ireland, for it is something quite outside the ordinary range here, both with regard to the width of leaves and thickness of tubers, the extreme given in Gray's *Manual* for the latter being 8 mm., the width of the leaves not being mentioned, but I may say that 13 mm. represented the extreme in my collection previous to finding the above plant.

In conclusion, now that affairs in Ireland seem to be more settled, it is to be hoped that someone may be found willing and able to study the underground development of S. Romanzoffiana in that country, with a view of seeing whether similar conditions prevail there, as out here, and of thus strengthening the general opinion that the Irish and American forms are one and the same thing.

As before, the photographs from which the plate has been made were taken by the Geological Survey at Ottawa, and I am again indebted to Dr. M. O. Malte for them.

BRISTOL FLOWER SHOW.

AT the summer show held at Whitehall, Bristol, Dr. Cairns, Devon House, Whitehall, was awarded the first prize for the best six Orchids, his specimens including Cattleya Dupreana (Warneri × Warscewiczii), with four flowers, C. Harold (Gaskelliana × Warscewiczii), also with four flowers, and Miltonia Hyeana var. Fairy Queen, a very pretty plant carrying no less than 20 flowers.

E. W. Bryant, Esq., The Poplars, Bristol, secured the second prize, his exhibit containing Cypripedium warnhamense, with six flowers, Cattleya Warscewiczii Sanderiana, C. Gaskelliana superba with six flowers, and a pleasing variety of Odontoglossum Jasper, bearing a spike of ten flowers.

Messrs. A. J. Keeling & Sons received a Gold Medal for a group occupying 75 square feet, and containing many choice examples of Cattleyas, Brassocattleyas, Odontoglossums and Cypripediums.

Messrs. Cypher & Sons were also awarded a Gold Medal for a large group of foliage plants, the central area being composed of fine forms of Cypripedium Rothschildianum hybrids, as well as attractive Cattleyas.

AUTUMN ORCHID SHOW.—The Special Autumn Exhibition of Orchids will be held at the Royal Horticultural Society, Vincent Square, Westminster, on Tuesday and Wednesday, October 21st and 22nd.

ODONTOGLOSSUM MRS. W. THOMPSON.

AFTER studying the pedigrees of many of the large-flowering Odontoglossums that were raised in the early days of hybrid production in this genus, one is forced to the conclusion that O. luteopurpureum is responsible for some of the prominent characteristics. No better-known example exists than in O. Wilckeanum, a natural hybrid between luteopurpureum and crispum, but subsequently raised in gardens. Varied matings

ODONTOGLOSSUM MRS. W. THOMPSON.

with this large flower produced a long series of attractive hybrids, in almost all of which the features of O. luteopurpureum are discernible. The accompanying illustration of Odontoglossum Mrs. W. Thompson affords an example of this section. Strong indications of O. luteopurpureum are seen in the toothed margin of the petals, as well as in the elongated lip with the spiny crest at its base. The precise parentage of this hybrid is unknown, but O. Harryanum is probably included.

FLOWERING SEASON OF TEMPERATE HIMALAYAN ORCHIDS.

By B. N. GHOSE, Darjeeling, India.

FLOWERS of gorgeous colours court only sunshine: no flowers of interest expose their beauty to the outside world when the sky is overcast with clouds. Premising thus, let me direct attention as to how far this is true when applied to Orchids found in the neighbourhood of Darjeeling. But before I can explain this I must digress a little and dwell on the physical aspects, climate and rainfall of the Darjeeling-Himalayas.

It must be remembered that the axial range of the Himalayas, which rises to more than 20,000 feet above the sea-level, acts as a barrier to the moisture-laden clouds from the Bay of Bengal. For a hundred miles from the plains of Bengal to the axial range of the Himalayas we have a very rugged country of mountains and valleys. The base of the ranges and the low valleys have a steamy hot atmosphere, and are clad with luxuriant vegetation, whereas the mountain tops are capped with perpetual snow fields and glaciers too cold for any living thing to survive.

The flora of the Darjeeling-Himalayas may be divided into three zones, according to altitude: the tropical, the temperate, and the alpine. For practical purposes, we may take the following figures to divide them :—

(1) The tropical belt rising from the base of the ranges to about 5,000 feet above sea-level.

(2) The temperate zone extending from 5,000 feet to 9,000 above sea-level.

(3) The alpine zone rising from 9,000 feet to 12,500 feet above sea-level.

The rainfalls on these zones differ widely. The mountain slopes directly exposed to the effect of monsoon currents are extremely humid, while the valleys in the interior are comparatively drier. During the rainy season, lasting from June to September, we have very heavy and prolonged rainfall. The weather at this period of the year is hot, the air is saturated with moisture, and the sky overcast with clouds. But it must not be supposed that at this season rain falls continuously. There are intervals of fine weather prevailing for hours or for days together. This is succeeded by a prolonged period of fine dry weather with clear skies, decrease of temperature and humidity, with occasional rain, lasting till January ; then we have a gradually increasing temperature from February to May. During the transition period from the dry to the rainy season (March—May), we have violent storms accompanied by rainfall, which, however, is not very considerable.

With climatic conditions varying in these different zones, the rainfalls also vary considerably. The rain currents from the Bay of Bengal move

landwards and come under the influence of the southern slopes of the Assam Hills, where they deposit a large portion of their moisture. The lightened currents are deflected north-westwards, rising gradually as they move forward, and strike in the temperate zone of the outer ranges of the Darjeeling-Himalayas, where they condense and give more rain than at the base and the top of the mountains. Often when the sun is shining in the valleys below, it is raining on the higher slopes. I observed this curious phenomenon when accompanying Professor Geddes, of St. Andrew's University, during his botanical excursions in these valleys for several weeks during one rainy season. Often when we returned after a day's excursion we were surprised to find the streets of Darjeeling thoroughly soaked with rain, and the drains and gullies filled with running water. In the valleys below we often had sunshine so bright and hot that we were obliged to take shelter under the trees during the middle part of the day.

For the above reasons the entire surface of the Darjeeling Himalayas cannot be treated as a single whole. We will only deal with the Orchids found in the temperate zone. The number of species recorded from this zone is 190. Of these, 104 have very inconspicuous flowers, and only 86 possess flowers that may be classed as conspicuous. Although Orchids flower at all times of the year, the flowering season may be broadly divided into two periods :—(1) during the rainy season, and (2) during the dry season. We have already discussed the conditions of the weather prevailing at these two periods. The following table shows the flowering season of both of these sections of Orchids :—

Section of Orchids.	Number Flowering.	
	During Rainy Season.	During Dry Season.
Inconspicuous	78	26
Conspicuous	16	70

All green-flowering Orchids have been included under inconspicuous. Some Habenarias, although bearing large and curious flowers have been classed as inconspicuous, as their flowers are not attractive. The following are some of the Orchids of the conspicuous section that flower during the rains :—Dendrobium Gibsonii, D. Hookerianum, D. chrysanthum, Cryptochilus sanguinea, Calanthe puberula, C. trulliformis and C. alpina.

From the above table it is clear that a very large number of Orchids of the inconspicuous section flower during the rains. Of the 86 gorgeous-flowering Orchids, no less than 70 flower during the dry season of the year. As flowers shun the rainy season, they also avoid the depth of winter, for I

have not seen any Orchid flowering at this season of the year, except Pleione humilis, when low temperature, clouds, and fogs prevail.

Some years ago, I observed that the buds of a Dendrobium Hookerianum were unable to unfold their petals at the proper season, owing to incessant and heavy rains. The buds lasted longer than usual, as if waiting for favourable weather, but at last they rotted away. In the following year, at this plant's time of flowering, there was a prolonged break in the rains, and all its buds opened; butterflies and insects were then flying about in the sunshine. This proves conclusively that an Orchid of the conspicuous section, flowering even during the rains, awaits the sunshine before unfolding its petals.

From an examination of the Orchids of the Darjeeling-Himalayas, one would come to the conclusion that the course of evolution pursued by a large number of them is not towards greater perfection with regard to shape, size, or coloration, but towards degeneration into more primitive forms. Climate, environment, moisture, temperature, nutrition, light, etc., serve as stimuli in advancing plants towards greater improvement. With changes in any of these factors there comes a change in the life of the plant. Those unfavourably affected and unable to progress forward must go backward, acquiring new characteristics for the preservation of the race. Others unable to carry on their life process, dwindle away and become extinct. Those that survive in their struggle for existence are again caught in their regressive stage by favourable climatic and environmental changes, and are once more pushed forward in their path of progress. We find that the environment and climate of the Patkoi hills have a favourable influence on Dendrobium crepidatum, whereas the existing conditions of the Darjeeling-Himalayas have very unfavourably affected this plant, and have driven it to the exigency of self-fertilisation in order to preserve its existence. The Darjeeling plant is smaller and bears less conspicuous flowers, whereas the insect-pollinated plant of the Patkoi hills is robuster and has large flowers which last longer in beauty. It would be a very interesting study if a few plants of D. crepidatum from Darjeeling could be transplanted to the Patkoi hills, and the resulting changes in their habits and characters duly observed.

CŒLOGYNE DAYANA, when out of flower, may be shifted into larger pans or baskets. This beautiful garland Orchid is always greatly admired, its long drooping racemes adding variation to the already long list of Orchids that bloom in May and June. It is not a difficult Orchid to cultivate, and may be treated as an intermediate or stove plant. It delights in liberal watering when growing, and comparative drought when resting.—*J. Mackay.*

THE NONSYMBIOTIC GERMINATION OF ORCHID SEEDS IN BELGIUM.

By Drs. G. and M. Ballion, Botanical Laboratory, Ghent University.

WE read with much interest in the *Orchid Review*, August, 1924, pages 233-8, the article on the "Nonsymbiotic Germination of Orchid Seeds," as practised in England by Mr. Edward Clement. We here record the manner in which the problem of the scientific germination of Orchid seeds has been studied in Belgium.

All first attempts (December, 1921,) to induce activity of the seeds consisted in following the experiments of Bernard and inoculating young embryos with species of Rhizoctonia of ascertained virulence. Some chance remarks, however, made by this author in chapter vi. of his work: "Les Orchidées et leur champignons commensaux" caused us to begin our researches on the nonsymbiotic germination of Orchid seeds. Bernard was able to raise seeds of Bletilla hyacinthina (a primitive Orchid) by the action of a more concentrated solution of salep than that which he usually employed for his seedlings. He had thus obtained the first stages of germination in Cattleya and Cymbidium seed, but with irregular growth. From these experiments he inferred that the mechanical action of the endophytic fungi consisted in increasing the concentration of the solutions in which they grew, by digestive actions, and so increasing the concentration of the sap of the seedling into which they had penetrated. He thus compared the action of the fungus to that of concentrated solutions.

The organic solution of salep, however, which he used brought about irregularities in the morphology of the more advanced Orchids, and so only imperfectly satisfied the needs of the problem. This was in no way to be wondered at. Molliard in France, studying the effect of more or less concentrated organic solutions on the development of the seeds of radish, carrot, parsnip, etc., showed that they lead to physical anomalies, such as abnormal size of subterranean organs, formation of multiple rootlets and reduction in leaf system. Burgeff, in Germany, using purely organic solution, obtained only insignificant results, the diameter of his largest Orchid seedling hardly exceeding 0.5 mm.

From these results it would appear that the action of organic solutions, while stimulating the germination of the seeds, does not bring about the normal growth of the young embryo in a satisfactory manner. (This does not refer to Knudson's work in the United States, who tried which of eighteen different sugar solutions best replaced the physiological stimulus of the fungus). The realisation of the asymbiotic germination of Orchid seeds with subsequent regular development must depend upon other

lines of investigation. In the same way as hypertonic solutions or specific chemical solutions can replace the fertilisation of an egg by a spermatozoid (experiments in parthogenesis: Loeb: action of 2 per cent. solution of manganese chloride), so we have tried to find a culture medium which from its chemical composition alone will contain the necessary substance for stimulating germination. After much arduous research we found a nutritive agar medium, half organic, half mineral, which was satisfactory for the germination of Cattleya.

The first clearly positive results were obtained in July, 1922, and in April, 1923, in the scientific section of the Floralies we showed several Erlenmeyer flasks with asymbiotic seedlings remarkable for their exceptional vitality and rapid development.

These Cattleya seedlings, and others of Miltonia and Odontoglossum, also in culture tubes, bore testimony in no uncertain manner to the fact that the seeds of these three genera can be germinated and maintained when sown upon a suitable nutritive solution which differs somewhat from each. We note with pleasure that Mr. Clement is completely in accord with our opinion.

Continuing our investigations with Cattleya seeds, we have sought difficulties. On the one hand we worked with trigeneric types which are well-known for their inert seeds, and on the other hand we sowed seeds in the depth of winter when external conditions were deplorable. To our great satisfaction we obtained really superb seedlings of C. Edina × Slc. Anzac at the first attempt. They are pricked out in pots, and though now only thirteen months old they proudly bear above the compost a bouquet of five leaves, the largest of which is $4\frac{1}{2}$ cm. in length, the smallest $1\frac{1}{2}$ cm. While asymbiotic germination in the culture tubes furnished 90 per cent. of healthy and vigorous seedlings, the control experiment by the old empirical method showed no germination.

In the second experiment, seeds of Bc. Memoria Leopoldi × C. Fabia formed protocorms with normal root-hairs, and the first signs of leaves at the end of six weeks. In June these seedlings, which germinated the previous December, were pricked out with sphagnum and recovery soon took place, thanks to the immediate penetration of the compost by the young root. At present they have three leaves, the longest 13 mm., the shortest 4 mm. The control experiment, which consisted in sowing seeds on the soil of the adult plants, gave the negative results which one had foreseen. The Miltonias, which at the Floralies of 1923 were dark green flattened protocorms, are now pricked out in pots. They have already formed six fine leaves varying in length from 1 to $3\frac{1}{2}$ cm.

The Odontoglossums which have been pricked out do not appear to be thriving so well as those obtained symbiotically according to Bernard's

method. In this case some alteration is at present required in the asymbiotic method of culture.

We have also carried out some investigations on the germination of Cymbidium seeds, working with a nutrient medium again slightly different from the preceding. The seeds at the end of several weeks formed the top-shaped protocorm characteristic of Cymbidium, with abundant root-hairs. As growth progressed, seedlings were pricked out separately in Erlenmeyer flasks. These, now ten months old, have two to five roots creeping on the surface of the agar with lengths varying from ½ to 5 cm. Above the protocorm three to five leaves are borne with the extreme dimensions of 1 and 4 cm.

Most of these results were shown to members of the Faculty of Sciences of the Ghent University at the time we presented our Thesis, and the experiments have been followed by Dr. C. DeBruyne, University Professor of Botany.

We are at present carrying out experiments with the seeds of Phalænopsis, Vanda and Masdevallia, and the results will be reported later.

To summarise our results:

(1) The composition of the culture medium in the asymbiotic germination of Orchids which replaces the action of the fungus varies from species to species.

(2) The great stumbling block in such experiments, especially for beginners, is infection. We have used disinfectants of all kinds for sterilising (corrosive sublimate, boric acid, carbolic acid, alcohol, eau de Javelle, calcium hypochlorite). Hydrogen-peroxide has given us the most perfect disinfection, at least when the exceptional opportunity occurred of sowing seeds immediately from an unopened pod which was quite mature.

(3) The transfer of seedlings to the final non-sterilised compost is carried out easily and rapidly if care be taken to remove the least trace of agar with the protocorms and roots, otherwise a secondary infection is to be feared.

(4) The scientific germination of Orchid seeds is possible at any time of the year. It is a great advantage to be able to use seeds which will no longer germinate by using the old empirical methods.

Incredulous orchidophiles have prophesied that Orchids obtained by the asymbiotic method will be incapable of flowering. On what foundation do they base so dogmatic a statement?

In the first place, the researches on asymbiotic germination in England, France, the United States, and Belgium have not yet been carried on a sufficient time for the plants to have arrived at flowering. Secondly, Clement, like ourselves, has shown that in plants of the same species of Orchids there is a very unequal distribution of the fungus in the roots, and this irregularity in no way affects flowering. Further, cannot the

asymbiotic plant when transplanted become a symbiotic plant in the sphagnum and in its turn harbour the endophyte in its roots? Moreover, has the fungus any function in the roots other than a parasitic one until the tables are at last turned on the invader? Thirdly, do endophytic fungi occur only in Orchids? Many roots of other plants harbour fungi in their cells. Endophytic mycorrhiza have been recorded by Kamiensky, Frank, Groom, Stahl, Shibata, Gallaud, etc. We ourselves have found at least thirty-five new cases of facultative symbiosis in humicolous species.

It is to be noted that morphologically no difference whatever can be noted between a plant with mycorrhiza and one without.

Up to the present, Orchids have been considered as typical of obligatory symbiotic plants. As a matter of fact, however, symbiosis is obligatory only at the moment of germination and afterwards remains facultative when the variable secondary infection of the roots occurs.

The realisation of asymbiotic germination suppresses this notion of obligatory symbiosis, at least so far as green autotrophic Orchids are concerned. Orchids, like many other plants, are facultative symbiotes.

Consequently, it is logical to suppose that they behave in the same way as do their congeners and that a microscopical examination will, of itself, establish that whether they harbour little, no, or much fungus in their roots, their morphology and afterwards their flowering is in no wise affected. While awaiting such results, it is reasonable to follow up our researches with the idea of obtaining viable seedlings easily and with great rapidity for the information obtained, even if it is not of practical application, nevertheless, adds to our knowledge of botany.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Andromeda	C. armainvillierensis × Bc. Digbyano-Warneri	Geo. Wm. Bird.
Brassolæliocattleya Eileen Low ...	Lc. Henry Greenwood × Bc. Digbyano-Trianæ	Stuart Low.
Brassolæliocattleya Gertrude Fannin	Lc. brugensis × B. Digbyana	Sanders.
Brassolæliocattleya J. M. Black ...	Lc. Firminii × Blc. The Baroness	Flory & Black.
Brassolæliocattleya Titania	C. Iris × Blc. The Baroness...	Stuart Low.
Cattleya Alice Abeel	Dowiana × Zephyr	J. P. Mossman.
Cattleya John Henry	Astron × Lady Rowena	Baron Schröder.
Cypripedium Unique	Fairrieanum × Rothschildianum	Sanders.
Læliocattleya Edward Matthews ...	C. Hardyana × Lc. Aphrodite	„
Læliocattleya Fantasia	Lc. Thyone × C. Triumphans	Flory & Black.
Odontioda Juanita	Oda. Brewii × Odm. Pharos	R. Gerrish.
Odontoglossum Gundo	Thomsonianum × Queen Alexandra ...	Philip Smith.
Odontoglossum Our Duchess ...	Magali Sander × amabile	Sanders.
Odontonia Ailsa	Otna. Princess Marie José × Odm. eximium.	Philip Smith.
Odontonia Joiceyi	Otna. Pittiæ × Odm. Tityus	Charlesworth.

R.H.S. AMATEUR FLOWER SHOW, 1925.—Copies of the Schedule can be obtained from Royal Horticultural Society, Vincent Sq., Westminster, S.W.1.

ODONTOGLOSSUM ASPIDORHINUM.

THIS pretty little species, a native of Columbia, was found growing on trees in dense forests on the eastern declivities of the western Andes of the Cauca, at 2,200-2,500 metres above sea level. Its discoverer, Consul F. C. Lehmann, described it as "beyond any question the most floriferous Odontoglot" (*Gard. Chron.*, Sept. 28th, 1895). In substantiation of this he stated "Not only does every pseudo-bulb produce two flower-spikes at one time, but they do so for two and even three years in succession, a character which, though common among Masdevallias, has not yet been observed with Odontoglossums. It is therefore quite common to meet with comparatively small masses with twenty to thirty flower-spikes at one time, and as many as thirty-eight have been observed on one plant."

At the meeting of the Royal Horticultural Society, July 28th, 1896, an Award of Merit was given to a specimen with ten racemes from the collection of Sir Trevor Lawrence, and on August 19th, 1902, a Cultural Commendation was given to Mr. W. H. White for bringing this plant to perfection, for it then bore twenty-four spikes. In 1914 this specimen had increased so favourably that it carried no less than forty-five spikes, with an aggregate of about 500 flowers, all open at the same time.

O. aspidorhinum is by no means so frequently seen as it deserves. It is, however, well represented in the extensive collection of H. T. Pitt, Esq., Rosslyn, Stamford Hill, London.

Cattleya John Henry.—This attractive hybrid has been raised by Mr. J. E. Shill in the collection of Baron Bruno Schröder, Englefield Green, Surrey. The parents are C. Astron and C. Lady Rowena, both of which originated in the Baron's collection, the former in 1914, the latter in 1915. The pure-white varieties of the species primarily involved in the ancestry of this novelty have remained constant, so far as their albino nature is concerned, the flower of Cattleya John Henry comprising pure-white segments of excellent formation, the only colour being a lemon-yellow area in the throat. Named in honour of Baron Schröder's grandson.

Odontoglossum Gundo.—A useful addition to what may be called the Edwardii section of Odontoglossums has been raised in the collection of Philip Smith, Esq., Haddon House, Ashton-on-Mersey (gr. Mr. E. W. Thompson). The parents are O. Thompsonianum (crispum × Edwardii) and O. Queen Alexandra (Harryanum × triumphans), thus combining four well-known species. The sepals and petals are blotched with dark chocolate red, the comparatively large labellum is yellowish, blotched with dark crimson, and having a spiny crest of bright yellow colour.

CULTURAL NOTES.

SUITABLE POSITIONS.—No pains should be spared in selecting for each plant the best and most favoured position for the winter, which may or may not vary from that occupied during the summer months. Select the roof principally for those to be rested and dried the most, the driest end for those quite dormant, and the moistest for those still growing, or the sunniest or shadiest parts as the case may demand. Even the removal of various species from one house to another is often done with satisfactory results. For instance, owing to the want of space, or some other cause, many growers place some species in the coolest house during summer, but are careful to remove them back to intermediate temperature for the winter, and such treatment invariably answers well, especially if the latter department is required to be kept rather warmer for certain things, like Cattleyas or Dendrobiums, during the summer. I may here enumerate a few species which are the better for such change of houses:—Ada aurantiaca, all those Oncidiums that are known as cool-growing kinds, Cymbidiums, Odontoglossum grande, O. hastilabium, O. cirrhosum, O. citrosmum, O. cordatum, O. Harryanum, O. Insleayi, O. maxillare (madrense), O. nævium, O. Krameri, the whole of the Masdevallias, but particularly M. tovarensis, M. ephippium (Trochilus), M. Shuttleworthii, M. macrura, all the Chimæra section, the cool-growing Lycastes, Sophronitis grandiflora, and the Pleiones. The vacant spaces thus created in the cool house might conveniently be filled during the winter with the cool-resting Dendrobiums. —*H. A. Burberry, October*, 1899.

WASHING THE FOLIAGE OF ORCHIDS.—Growers of plants know that cleanliness is of the utmost importance to successful cultivation, and now that most Orchids have finished their season's growth the work of cleaning them should be proceeded with. All plants that have the foliage dirty should be washed, but I am not a believer in washing for washing's sake, or to keep men employed. Where there has been, or is any kind of insect pest—scale, red spider, mealy bug, green fly, ants—careful cleaning must be done. Foliage may also become dirty through exudation from flower buds, syringing with chalky water, etc., when it will be necessary to clean the pores of the leaves, so that they may be able to properly carry on their functions; but clean leaves need not be washed. For instance, the bulb and leaf just finished should not require washing. Wash the plants that are dirty or infected by insects, but not those that are already clean. While disliking dirty foliage, I also dislike the unnatural polish that follows a good rub up. I should not recommend the washing of the foliage of Odontoglossum crispum—a comprehensive wash, I mean—for I am sure that a good many yellow leaves would follow.—*J. M. Black, October*, 1906.

Damping Down.—A little judgment must be used when damping during the next few months. The outside conditions must be taken into consideration, especially where the houses are not very well heated. Where the grower has good boilers and well heated houses he is pretty safe to use plenty of moisture at almost any time, but where they are underheated—and the majority of houses are, so far as my experience of them goes—one is pretty well ruled by outside conditions. If the houses do not dry quickly no hard and fast line should be followed, but damp them as often as they dry. Where blinds are used they will be found a great help in frosty weather. We use ours every night, as on a mild night one needs very little fire with them run out, and in a snowstorm they are as good as a blanket. Temperatures should read about as follows in the mornings: Cool house 55°, Intermediate house 60°, Cattleya house 65°, Stove or Warm house 70°. Allow a rise of 10° by sun heat, and 5° at midday, if fire heat has to be used all day.—*W. H. Morgan, October* 1909.

Cattleyas.—By this time many of the spring-flowering Cattleyas, as C. Trianæ and C. Mendelii, will have finished their growth, and consequently they will require less moisture at the root, and all the sunlight possible, so that the newly-formed bulbs may be properly hardened and matured, and thus be prepared to withstand the drain upon their resources when the flowering season arrives. When the growths of these species are matured the plants should be watered only at long intervals, receiving just sufficient to keep the bulbs and leaves from more than slightly shrivelling, but sufficient must be given to induce the plants to make plenty of roots, which they will continue to do for some time if properly watered. On the other hand, it should be remembered that too much water at the root or in the atmosphere is one of the principal causes of black rot, sometimes seen amongst this beautiful class of Orchids, and it is therefore the safest and best plan to err rather on the dry side than on the wet.—*J. Mackay, October,* 1903.

Dendrobiums.—Many of the spring-flowering Dendrobiums have now completed their new pseudo-bulbs, and desire nothing more than to be placed in a department where the atmosphere is somewhat dry, with plenty of air, and a cool temperature. For the majority of these, the thermometer should register from 45° to 55° throughout the greater part of the winter or resting months. In such a temperature, with but little water given, the pseudo-bulbs will remain plump and hard, and their flower buds will slowly develop. Plants may be selected as required, and placed in slightly warmer positions for flowering. When the flower buds have attained a good size they should receive a little more heat, when they will expand in about two weeks. If any of the plants have started to grow again they must still undergo the same system of rest, or they will soon deteriorate. If there is no separate department suitable for resting Dendrobes, the Cool Orchid

house makes a splendid place for them, and if there be one place more cool and airy than another, see that it is occupied by D. Wardianum, so that a complete rest shall be insured.—*H. A. Burberry, October,* 1889.

DENDROBIUMS—undoubtedly flower much more freely when the new growth is completed early, so that there is still time, before the sun has lost its power, to thoroughly mature and ripen it, so that next year they will probably not be quite up to their usual standard of excellence, which is very unfortunate, though unavoidable. I am not an advocate under any circumstances of squeezing out of Dendrobiums the greatest possible number of flowers by severe resting. It is not altogether a system to be lightly recommended, for it frequently happens that when plants are so severely rested, coupled with the great strain upon the plants in supporting so many flowers, it reduces them to such a state of utter exhaustion as to necessitate several years of skilful culture to bring them back again to health and vigour. For instance, it is quite possible by giving Dendrobiums of the nobile class a very long and excessively dry rest, to make them produce flowers from the last made pseudo-bulbs;—very pretty, of course, but not quite natural or reasonable, and as a consequence the piper has to be paid, sometimes, perhaps, very dearly. When the season of growth arrives the mischief is apparent, and one such short growing season as we have just passed through does not by any means remedy the evil. I would therefore advise growers not to go to extremes in this respect, but rather to be content with a moderately well-bloomed plant, for such moderation is sure to prove more satisfactory in the long run.—*H. A. Burberry, November,* 1894.

DENDROBIUM WARDIANUM.—Most of the D. Wardianums will also now be ready to remove, and this species is one that will stand more cold when at rest than any of the other warm-growing kinds, and keeps much better for a temperature of 40 to 45 degrees in cold weather and until the end of February. This species may be had in flower in January, but it is a bad plan to force them thus, and the plants quickly deteriorate, whereas, if not allowed to flower until the middle of March, they would remain strong and healthy. It is quite natural for the new growth to push quickly from the base, as they seldom remain quite dormant for long, but such growths make but little progress during the winter, only becoming thick and sturdy, and evidently enjoy their cool rest at the proper season. The flower buds also soon begin to swell, and this they do, slowly but surely, in the cool dry atmosphere, and quickly expand in March, when a little extra warmth is applied. Owing, no doubt, to the new growth and flower-buds showing so early, the plants are thought to want more heat to hasten them along, and they are straight away taken to a hot and moist growing temperature. This is the reason of this beautiful Dendrobium being too often seen badly flowered and in a dilapidated condition.—*J Mackay, October,* 1905.

LYCASTE GIGANTEA.

THIS elegant species was discovered in 1842 by Hartweg, near Guayaquil, in Ecuador, who sent it to the Horticultural Society at Chiswick, where it flowered in 1845. It was described by Lindley (*Bot. Reg.*, 1843, misc. p. 15) with the remark that "although the flowers of this

LYCASTE GIGANTEA.

species are not gay, yet its large size and the great height to which its flowering stem rises are remarkable features." The illustration is of a plant flowering in the establishment of Messrs. Charlesworth & Co. It will be noted that the flowers have a tendency to remain only partially open, so that the plant requires to be well elevated in order that the best

effect may be obtained. In colour, the sepals and petals are olive-green, the labellum maroon-purple, with a border of orange. A variety known as labello-viridis is distinguished by a green labellum. The geographical range of this species is considerable. It has been collected on the Cordillera of Venezuela, and on the eastern Cordillera of Colombia, as far as Bogota, always at a high elevation. Cool-house treatment brings about satisfactory results, and well repays the owner with a number of elegant flowers.

GLASGOW FLORAL EXHIBITION.

THIS important event took place in the Kelvin Hall, Glasgow, September 2, 3, 4, and 5, and was in every way a great success, the Orchids being particularly attractive.

Messrs. J. & A. McBean, Cooksbridge, Sussex, were awarded a Large Gold Medal for a splendid exhibit containing Brassocattleya Heatherwood superba, with a couple of massive flowers, the pretty Bc. Ilene, and Bc. Nodina (B. nodoso × C. Enid), in which the broadly developed labellum is spotted. Cattleyas included Prince John, with five flowers, as well as Falco, Sibyl and Hardyana, the latter also represented by the variety alba with a spike of five flowers. Læliocattleya Profusion was the principal one of its class.

The Odontoglossums staged by Messrs. McBean were truly fine, and came in for much admiration, for probably never before have such excellent examples been seen in the month of September. They comprised several meritorious crispums of the premier type, and a large selection of blotched hybrids, of which Doreen, Conqueror, Belenus and St. George stood out prominently. Interspersed were several fine spikes of the home-raised pure-white crispum. Odontiodas included a fine plant of Gladys, with 16 flowers, as large as those of an Odontoglossum, also Oda. Dovere, Brewii and Euterpe. Odontonia brugensis bore a branched spike, Miltonioda Hilda carried flowers of charming coloration, and there were also examples of Oncidioda Cora and varieties of Odontocidium.

Messrs. Cowan & Co., Southgate, received a Gold Medal for an attractive exhibit, the principal plants being selected varieties of Cattleya Sibyl (Dowiana × iridescens), C. Thebes, C. Diana, and C. Aeneas, the latter producing for the first time a large flower of thick substance and fine formation, the sepals and petals bronze-yellow, the isthmus of the labellum highly coloured. Læliocattleyas included a magnificent form of Maqueda, bearing three very large richly coloured flowers, also Lc. Robertsonii, with rich yellow sepals and petals, and several examples of Lc. Hassalii alba, with pure-white sepals and petals, the labellum bright purple.

Brassolæliocattleya Muriel bore a couple of immense flowers, rosy-mauve in colour, while Cypripediums included the large-flowered Bedfordiæ, and a batch of Maudiæ magnificum. In the background were some splendid specimens of Odontioda Grenadier, one having a spike of 76 flowers. Oda. Diana and Laura were also shown, as well as Odontoglossum grande and Zygopetalum Mackayi.

Messrs. Sanders, St. Albans, were awarded a Silver-Gilt Medal for an exhibit containing three novelties; Lc. Edward Matthews, obtained by crossing C. Hardyana alba with Lc. Aphrodite alba; Odm. Our Duchess (Magali Sander × amabile var. Duke of Portland); and Cypripedium Unique, the result of crossing Fairrieanum with Rothschildianum. Of the previously recorded hybrids there were varieties of Odontioda Grenadier, Odm. Lambeauianum var. White Lady, Cattleya Sylvia var. Queen Elizabeth, Lc. Mrs. T. Ward var. Triumph, and a district form of Cyp. Godefroyæ called Perfection. Cattleya Thebes var. Nile (Adula × Dowiana) was another attraction.

Messrs Charlesworth & Co., Haywards Heath, were also awarded a Gold Medal for an interesting group of plants, amongst which were fine examples of Cattleya Enid, C. Lord Rothschild and C. Hardyana alba. The Læliocattleyas included Appam, of rich apricot-yellow colour, Diana aurea, very distinct, and Marina superba (C. Hardyana × Lc. St. Gothard), a large flower of fine formation, the labellum of an intense rose-purple colour and with a yellow throat. We also noted Blc. Muriel and Sophrocattleya Lottie Muller, the latter bearing a couple of large richly coloured flowers Many splendid Odontoglossums were staged, conspicuous examples being Fabia, Doreen, and Harold, as well as Wilckeanum aureum, which was unusually well developed. O. crispum xanthotes perfectum bore a spike of remarkably fine flowers. Among the Odontiodas that came in for admiration was Chanticleer, with a spike of no less than 47 scarlet flowers.

Odontonias are amongst the newest introductions of Messrs. Charlesworth, and in Odontonia Duchess of York (M. Bleuana × O. majesticum) there exists a plant whose flowers are the best of their kind we have yet seen, of carmine-rose colour, the sepals and petals spotted with a deeper shade. Odontonia Dora carried a spike of 6 flowers, and there were also some superb varieties of Miltonia Beau Brummell, M. Wm. Pitt, and M. Hyeana the tasteful staging of which gave a finishing touch to this group.

Peter McQuarrie, Esq., Woodside, Paisley, arranged a very pleasing exhibit in which excellent examples of Cattleya Hardyana alba, C. Atalanta and C. Iris were included. Odontoglossum Colossus, and Odontioda Coronation were also in fine form, while Lælia tenebrosa was noted for its specific character.

ROYAL HORTICULTURAL SOCIETY.

August 26th, 1924.

MEMBERS of the Orchid Committee present: C. J. Lucas, Esq., (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, Stuart H. Low, Richd. G. Thwaites, A. McBean, T. Armstrong, J. E. Shill, Ernest R. Ashton, Arthur Dye, Henry H. Smith and H. T. Pitt.

FIRST-CLASS CERTIFICATE.

Cattleya Tagus var. Excelsior (Rhoda × King George), from Messsrs, Flory & Black, Slough. A marked advance towards the production of the large-flowered yellow Cattleya. The present composition of the four species aurea, bicolor, Rex and Warscewiczii has resulted in a flower of medium size, thick in texture, the petals comparatively broad, and with the sepals of a rich canary-yellow colour. The roundish labellum has the anterior portion velvety-crimson, the throat being veined with gold.

AWARDS OF MERIT.

Læliocattleya Mrs. T. Ward var. majestica (Hiawatha × Lustre), from Messrs. Cowan & Co., Southgate. This plant bore a large flower of attractive qualities, the well formed segments being of purple-rose, the expansive labellum rich purple, extending to the margin of the side lobes.

Læliocattleya Profusion var. compacta (Lc. Serbia × C. Hardyana), from Messrs. J. & A. McBean, Cooksbridge. A fine example of this hybrid, noted for its profuse flowering character; the above variety bore a spike of three flowers, compact in formation, deep rose-mauve colour, the round labellum of darker tint and with a crisped margin.

CULTURAL COMMENDATION.

To Mr. Thurgood, Orchid grower to H. T. Pitt, Esq., Rosslyn, Stamford Hill, for a finely cultivated plant of Maxillaria venusta, bearing nine flowers.

OTHER EXHIBITS.

H. T. Pitt, Esq., Stamford Hill, was awarded a Silver Banksian Medal for an unusually attractive exhibit, especially good for the month of August. In the centre was a tall plant of Aërides Lawrenceæ, clothed to the base with healthy leaves, and bearing a pendulous spike of large flowers. On one side was the distinct Miltonia spectabilis extraria, on the other Cycnoches Egertonianum viride. Other rare species included Stanhopea Wardii, Bulbophyllum virescens, with a large umbel of eight flowers, Epidendrum organense, the pretty Trias disciflora, and Cypripedium concolor Sanderæ. Many other Cypripediums were along the back portion, while in prominent positions were Cattleya Hardyana var. President Wilson, Odontoglossum Harryanum, the attractive Miltonioda Harwoodii, with a spike of nine rose-crimson flowers, and the pretty Odontoglossum aspidorhinum, with numerous flowers.

Messrs. Sanders, St. Albans, staged an interesting exhibit, comprising the rare Bulbophyllum macrobulbon, Stanhopea insignis aurea with a pendulous spike of five yellowish flowers, the curious Megaclinium triste, with a long rachis bearing minute flowers, Cirrhopetalum pulchrum and C. umbellatum, both well flowered, Cypripedium Godefroyæ leucochilum, in two distinct varieties, as well as Brassolæliocattleya Gertrude Fannin (Lc. brugensis × B. Digbyana), bearing a couple of expansive flowers of light rose colour.

Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Mr. Taylor), exhibited Læliocattleya Colmaniana, Bryndir var., with a spike of three handsome flowers, dark purplish in colour, the labellum deep crimson; also Læliocattleya Momus, Bryndir var., to which an Award of Merit had been previously given, and which now showed its excellent qualities to perfection.

Geo. Wm. Bird, Esq., Manor House, West Wickham, Kent (gr. Mr. Redden), staged Brassocattleya Andromeda (C. armainvillierensis × Bc. Digbyano-Warneri), bearing three large flowers of uniform rose-pink colour, and very pleasing in other qualities.

Messrs. Flory & Black, staged Læliocattleya Fantasia (Lc. Thyone × C. Triumphans), with cream coloured sepals and petals, the labellum golden, and margined with bright rose-purple.

September 9th, 1924.

Members of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, H. T. Pitt, H. H. Smith, A. Dye, F. K. Sander, A. McBean, T. Armstrong, E. R. Ashton, C. H. Curtis, Stuart Low and F. J. Hanbury.

Awards of Merit.

Cattleya Joyce Hanmer (parentage unrecorded), from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). Flower of medium size, bright canary-yellow colour, labellum of deeper tint and bordered with soft crimson. The spike carried two flowers, which suggested the inclusion of C. iridescens (bicolor × Eldorado) in their ancestry.

Sophrolæliocattleya Isabella var. Vivid (Slc. Marathon × C. Fabia), from H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). A pleasing hybrid bearing a couple of large flowers, of a peculiar buff-rose tint, the roundish labellum ruby-crimson with the central area of lighter colour.

Odontioda Juanita (Oda. Brewii × Odm. Pharos), from R. Gerrish Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). This novelty bore an erect spike with six flowers, well above the average size, of a chocolate-red colour, the broad labellum having an overtint of crimson and a bright sheen.

Brassolæliocattleya J. M. Black (Lc. Firminii × Blc. The Baroness), from Messrs. Flory & Black, Slough. A fine addition to the yellow-flowering section, the present example being of rich buttercup yellow, the sepals dotted with red on the exterior, the labellum having the central area suffused with ruby-crimson.

Læliocattleya Vega (Lc. Rubens × Lc. Soulange), from Messrs. J. & A. McBean. A finely formed flower with the segments broadly developed. In colour purplish-rose, the labellum darker and with the margin prettily crisped.

OTHER EXHIBITS.

R. Gerrish, Esq., Milford Manor, Salisbury, was awarded a Silver-gilt Banksian Medal for a splendid group, the general excellence of cultivation obtaining for his gardener, Mr. W. Sorrell, a Cultural Commendation. The centre was filled with the attractive Cattleya Joyce Hanmer, which secured an Award of Merit, C. Venus, a large flower of fine formation, C. Celia, pure-white, C. Mona, brightly coloured, and C. Boadicea, Gerrish's variety. In other places were well-flowered examples of Læliocattleya J. J. Ansaldo, Lc. Soulange and Lc. Ivanhoe, both possessing attractive qualities, and Lc. Maqueda, in which the dark lip was a noteworthy feature. Another excellent hybrid was staged in Lc. Hassallii alba, the bright purple lip standing out well against the pure-white sepals and petals. Odonto-glossums included Conqueror marked with rose-purple, J. H. Knight, and forms of amabile. Odontioda Juanita, with flowers of chocolate-red, also came in for admiration, and secured an Award of Merit.

H. T. Pitt, Esq., Stamford Hill, (gr. Mr. Thurgood) received a Silver Banksian Medal for an interesting group, including the remarkable Cycnoches chlorochilon, with its swan-like flowers, a dark variety of Dendrobium Phalænopsis, the curious Bulbophyllum barbigerum, B. mirum, and the pretty Habenaria rhodocheila. Cattleyas were represented by Hardyana var. Countess of Derby, as well as by Ella, and Cypripediums by Rossettii, Maudiæ and others. A finely flowered plant of Miltonia superba and Brassolælia Thwaitesii (B. Digbyana × L. grandiflora) were also staged.

Messrs. Sanders exhibited a selection of species and hybrids, the latter including a richly coloured flower called Cattleya Judith var. Gloria Mundii, and C. Fabia, of pleasing quality. C. Sibyl bore flowers of bright orange-yellow, C. Bellona, cream-white sepals and petals, and C. Veronica, a spike of three large flowers. Læliocattleyas were staged in Soulange and Mrs. T. Ward, both meritorious varieties.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier) exhibited Masdevallia veliféra, a Colombian species with brownish-red flowers, frequently malodorous; M. floribunda, a Mexican species, also

known as M. myriostigma; a well-grown example of Bulbophyllum barbigerum, and another member of the genus resembling a very fine form of B. Dearei.

Messrs. Stuart Low & Co. staged Brassolæliocattleya Eileen Low (Lc. Henry Greenwood × Bc. Digbyano-Trianæ), of rosy-mauve colour, the immense labellum of Tyrian purple and with a yellow disc on each of the side lobes; also Læliocattleya Ortega var. Sunset, buff-yellow; and Cattleya Suavior var. Aquinii, with bright purplish markings on the tips of the petals.

Messrs. J. & A. McBean staged Læliocattleya Profusion var. Celtic, a large flowering example of this recently produced hybrid between C. Hardyana and Lc. Serbia; also Odontoglossum crispum var. Regalis, with a spike of thirteen finely developed flowers, the sepals bearing a few purplish spots.

September 23rd, 1924.

The meeting on this occasion was held in the Holland Park Hall, when the following members of the Orchid Committee were present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), C. J. Lucas, Clive Cookson, F. K. Sander, W. H. Hatcher, S. W. Flory, Richd. G. Thwaites, H. G. Alexander, J. E. Shill, E. R. Ashton, J. C. Cowan, A. McBean, Stuart Low, C. H. Curtis, H. T. Pitt and A. Dye.

Awards of Merit.

Læliocattleya Marina var. Milo (C. Hardyana × Lc. St. Gothard), from Messrs. Stuart Low & Co. A handsome hybrid bearing a couple of large flowers, of soft rose-magenta colour, the handsome labellum ruby-crimson, throat veined with golden-yellow.

Brassocattleya Dietrichiana, Lambeau's variety (Bc. Mrs. J. Leemann × C. Fabia), from Messrs. Stuart Low & Co. An excellent variety which has been recognised for some time past on account of its extremely rich coloration, the broadly developed labellum being of even darker crimson-purple than the sepals and petals.

Groups.

Messrs. Stuart Low & Co. were awarded a Gold Medal for a beautiful exhibit containing Vanda cœrulea with a spike of 18 flowers and buds, several elegant varieties of Cattleya Æneas (Dowiana × Venus), with bronze-yellow segments, C. Harold, Fowler's variety, white, with purple mottling on the lip, as well as a fine selection of Brassocattleyas, of which Bc. Pallas and Blc. Thone were of outstanding merit. Læliocattleyas included Lc. Mrs. Medo, with bright yellow sepals and petals, and Lc. Profusion. The interesting Angræcum articulatum, Cymbidium erythrostylum, and Dendrobiums of the nobile class were also well staged, while a

number of richly coloured Cypripediums were neatly arranged. A rarity was seen in Oncidium hæmatochilum, with a spike of numerous flowers.

Messrs. Sanders received a Gold Medal for an attractive group in which the centre was occupied with a grand example of Vanda luzonica, bearing a spike of eleven flowers, while near by were three specimens of V. cœrulea. Odontonia brugensis carried a many-flowered spike, and Epidendrum vitellinum was also in fine form. Cattleya Hardyana var. Bruges Belle was a very distinct form, the labellum being unusually attractive. Among the Brassocattleyas were fine varieties of Ilene, and among Læliocattleyas those known as Serbia, Queen Marie and J. Ansaldo stood out well. Phalænopsis Rimestadiana, a large plant of Maxillaria venusta, and Oncidium pulvinatum bore excellent flowers, while near the front were many of the notable Cypripediums.

Messrs Charlesworth & Co. were awarded a silver-gilt Flora Medal for a meritorious group, the centre being filled with choice plants, such as Miltonia Wm. Pitt, beautifully coloured, the rare Paphinia cristata, and Platyclinis filiformis. Odontonia Olivia carried large flowers of yellow colour, and Odontoglossums were represented by Ceres magnificum, with a long spike of flowers. Cattleya Cowaniæ alba, C. Adula and C. Venus were all excellent examples of their kind, other notable plants being seen in C. Hardyana alba, C. Sibyl and the pretty Odontioda Beryl. Phalænopsis Esmeralda and various Masdevallias were also noticed.

Messrs. Flory and Black received a Silver Gilt Flora Medal for a fine exhibit of various Cattleyas, notable examples being King Victor, richly coloured, Vivid and Jasper. A wide selection was made of C. Tagus (Rhoda × King George), and C. Fabia ardentissima. Læliocattleyas were effectively staged, and included Gladys, Chimæra, finely coloured, Rex, golden-yellow, Zephyr and Radiant. A new Brassocattleya was seen in Alderman (Bc. Nestor × C. aurea), very promising, and other novelties in Lc. Prudence (Lc. Soulange × C. Rhoda), Lc. Troubadour (Lc. Teucra × C. Empress Frederick), and in Cattleya Wembley (Peetersii × Alexandra).

H. T. Pitt, Esq., Rosslyn Stamford Hill, exhibited Slc. Isabella var. Dainty Duchess, of pleasing rose-pink colour, the labellum tinged with ruby purple.

Baron Schröder, Englefield Green, Surrey, showed a flower of Cattleya Heliodor (iridescens × Venus), large in size and of a beautiful bright-yellow colour.

Messrs. Armstrong & Brown exhibited Cattleya amabilis, obtained by crossing C. labiata Gilmouriæ with C. Warscewiczii F. M. Beyrodt, the spike of three large flowers showing white sepals and petals with a bright purple labellum.

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To face p. 320.

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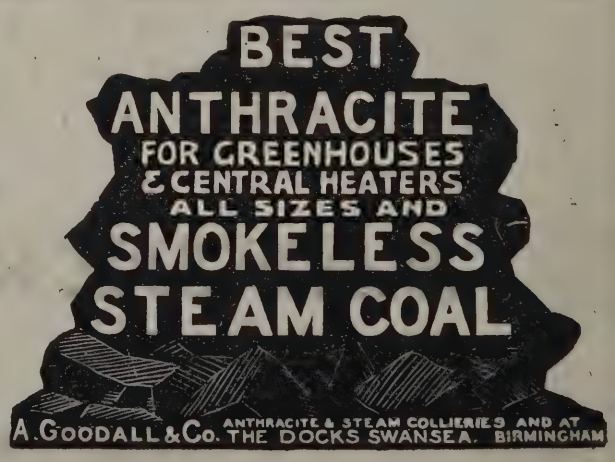

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THE ORCHID REVIEW.

VOL. XXXII.] NOVEMBER, 1924. [No. 377.

NOTES.

THE TIMPERLEY AND TYNTESFIELD COLLECTIONS.—I learnt with much regret of the disposal of the celebrated Tyntesfield collection on account of the death of its owner, Mr. F. Hardy. It is always a sad occasion for me to witness the breaking up of a collection that has taken years to form and been the means of affording pleasure to many people. How seldom does it occur that a collection is maintained by passing from father to son. Probably there are still some Orchid folk living who remember the uncommon event of father and son showing Orchids in competition. I refer to the Manchester Botanical Society, whose exhibition was held at Old Trafford in May, 1893, when Mr. G. Hardy, of Timperley, won the first prize for a grand group, and his son, Mr. F. Hardy, of Tyntesfield, obtained the second prize for a somewhat smaller exhibit.—W.G.

ORCHID CULTURE IN AUSTRALIA.—The *Orchid Review* is my one way of keeping in touch with Orchidophiles in other parts of the world, and I appreciate it accordingly. Unlike Melbourne, there are only a very few Orchid growers in Sydney; they are widely distributed and seldom meet. I have a wonderful show of bloom at the present time, over a hundred Cypripediums are in flower, mostly my own seedlings. It would be much more interesting if there were other growers with whom one could compare notes. Within the past couple of years I have imported seventy or eighty of the newer Cymbidiums. They are now acclimatised and are growing vigorously in a bush, or shade, house. I hope to flower a dozen or more that are now sending up spikes during our spring time.—*Arthur Yates, Sydney, N.S.W., Australia.*

BRITISH ORCHIDS. — Under the title "Some Notes as to British Orchids, 1924," further details regarding these interesting plants have been compiled by Mr. C. B. Tahourdin, 86, Manor Road, Wallington, Surrey.

Illustrations are given of Platanthera bifolia and of Ophrys apifera, the latter including a form in which the "Bee" lip is represented by a simple petal-like lip of pink colour. Of Orchis mascula, a freak was found in Kent, the florets being attached to the base of the ovary. Mr. Tahourdin mentions the finding of Orchis hircina on Ranmore Common, Surrey, and believes that there has been no Surrey record for about 70 years. With regard to Epipactis violacea, the author states that from observation it seems that this Orchid, while probably preferring the neighbourhood of beech trees, will actually grow under oak, ash, holly or hazel, and either in open spots or in dense undergrowth or even nettle-beds, or margins of open corn fields.

ONCIDIUM JONESIANUM.—It is some years since this elegant species was exhibited in a fine state of cultivation, or even seen in a condition sufficiently strong to yield a flower. It belongs to the teretifolia section of the genus, and imported plants are notoriously difficult to maintain in a healthy condition. It was introduced by Horsman, of Colchester, in 1883, through M. Saint Leger, a Brazilian plant collector, who discovered it in 1878 in northern Paraguay. It bears the name of the Rev. Morgan Jones, an amateur of that period. The plant is without pseudo-bulbs. Flowers 2-3 inches in diameter; sepals and petals white spotted with chestnut-brown; lip white with some red spots in front of the crest. In the variety flavens the sepals and petals are pale yellowish-green spotted with yellow, the lip wholly white; in the variety phænanthum the sepals and petals are reddish-brown.

MR. JAMES BRITTEN.—We regret to record the death of Mr. James Britten, K.C.S.G., F.L.S., aged 78, which took place on October 8th, at Brentford. Mr. Britten became a Fellow of the Linnean Society in 1870, and in the following year joined the staff of the Botanical Department of the British Museum, rising to the position of senior assistant by the time of his retirement in 1909. As editor of the *Journal of Botany* from 1880 till his death, he contributed much to botanical science. He will also be remembered as the author, with the assistance of W. H. Gower, of "Orchids for Amateurs," a useful book published without any date, but probably during the year 1878. It is therein stated that "The knowledge of Orchidaceæ has grown during the last fifty years at a rate quite disproportionate to that of the rest of the vegetable kingdom. Linnæus only knew about a dozen exotic Orchids, and stated his opinion that the world, when fully examined, might probably yield as many as a hundred species. Now, at least 2,500 are known to English horticulturists, while the number of species in the order is estimated at 6,000!"

VANILLA FRAGRANS.

IN his "Revision of the Genus Vanilla" (*Journ. Linn. Soc.* xxxii, p. 440), R. A. Rolfe stated that the earliest notice of a species of Vanilla is given by Clusius in his "Exoticorum Libri Decem," published in 1605, where fruits of the true Mexican Vanilla of commerce are described under the name Lobus oblongus aromaticus. They had been obtained from Hugh Morgan, apothecary to Queen Elizabeth. In 1651 Hernandez figured the characteristic growth and fruits of the plant under the name Araco aromatico, and seven years later Piso gave the information that it was now used by Spaniards as an ingredient in the manufacture of chocolate on account of its fragrance, and they call it "Vaynilla," or little pod.

In 1703 Plumier described the genus Vanilla for the first time, enumerating three species from the West Indies. The Mexican Vanilla was introduced to cultivation before 1739, but appears to have been again lost. It was re-introduced by the Marquis of Blandford and flowered in the collection of the Hon. Chas. Greville, at Paddington, a specimen being figured and described in 1807 by Salisbury, under the name Myobroma fragrans, and a year later by Andrews as Vanilla planifolia. Although the Vanilla of commerce has long been known as V. planifolia, Prof. Oakes Ames rightly states in his *Schedulæ Orchidianæ*, No. 7, that priority of publication belongs to Salisbury, and the specific name fragrans should be adopted.

The plant herewith illustrated was grown at Zion House, Brentford. The treatment consisted in giving ample heat and moisture during the growing season, February to August, no shade of any kind being given after the last-named month, and very little during the three brightest months of the summer. In Mexico, the plant's native country, fertilisation takes place naturally, but in most other localities artificial fertilisation is necessary. Six to nine pods may be considered as an average cluster, although as many as a dozen, and even more, have been produced, the individual length averaging about nine inches. In 1895, a plant in the Burford collection bore over fifty pods, and in 1901 a specimen in the Glasgow Botanic Gardens carried over 400.

To Prof. C. Morren belongs the credit of first producing fruits in quantity. He succeeded in producing 54 flowers on one plant, and by fertilising them artificially he obtained an equal number of pods. His paper on "The Production of Vanilla in Europe" was read before the British Association at Newcastle in 1838, when he suggested that the failure of this plant to fruit in India was probably due to the absence of some species of insect which doubtless existed in Mexico, and there fertilised the flowers.

According to the observations of M. H. J. de Cordemoy, whose opinions are given in the *Comptes Rendus*, February, 1904, and subsequently referred to in the *Gardeners' Chronicle*, June 25th, of that year, the Vanilla roots find, in the living stem to which they adhere, something more than mere support, and that between host and Orchid there exists a close relationship. "It has been found that first, there exists between the lateral and ærial roots of the cultivated Vanilla and the support to which it clings a mycorhiza (fungus) at once ectotrophic and endotrophic, that is to say, deriving nourishment from the outside and from the inside. The endophyte exhibits a ramified and continuous mycelium or spawn, which, by root-hairs serving as a means of communication, maintains a close relationship between the lateral root and its living support. Secondly, with this morphological connection there is very probably a corresponding physiological communication, the fungus being capable of forming in its tissues of living support certain nutritive properties useful to the growth of the Orchid. Consequently, there would be between this and the mycorhiza a partnership of true symbiotic association."

A paper on "Vanilla Culture as practised in the Seychelles Islands," by S. J. Galbraith, was published as a Bulletin of the U.S. Department of Agriculture. Vanilla cuttings are said to have been first introduced into the Seychelles in 1866, probably from Bourbon. By stopping the shoots twice, others are produced which hang down some four to six feet, and this method conduces to flowering. The flowers have to be fertilised by hand. The operation consists in removing the flap-like rostellum and pressing the pollen on to the stigma, a small piece of hard-wood of the size of a tooth-pick, flattened at one end, being used for the purpose. The work is performed rapidly, and, with flowers fairly numerous, an ordinary hand will pollinate a hundred or so per hour. The number of clusters of flowers will depend upon the size and condition of the plant, and, generally speaking, five or six out of a cluster of ten flowers may be fertilised. About thirty pods to a vine is about the number carried. Pods grow to their full size in five or six weeks, but take some eight months to ripen.

In the process of curing the pods for market, several methods are employed. A simple and successful one being as follows. About 400 of the longest pods are placed in a basket and plunged into hot water for ten seconds, and this is repeated twice, the second and third dips being increased to twelve and fifteen minutes respectively. The pods are then placed in a wooden box lined with blankets, and closely covered up with the same material. The smaller pods are treated with the water a little cooler, or the dipping a trifle shortened. By the following morning the pods should have changed colour, and are then ready to spread on the drying shelves.

In preparing the crop for market a curing house is used. The fruits are laid on mats or canvas, and as they begin to turn soft are removed to cooler chambers. When sufficiently cured and dried, the pods are wiped with

VANILLA FRAGRANS, GROWN UNDER ARTIFICIAL CONDITIONS IN ENGLAND.

soft flannel, tied in bundles, and kept in boxes with close-fitting lids, periodical examination being necessary for the removal of any mouldy ones. After four or five months any pods liable to mould will have shown themselves. The sound pods are then tied up in bundles of 50 each for market.

THE FERTILISATION OF SPIRANTHES ROMANZOFFIANA.

By HENRY MOUSLEY.

IN an interesting letter from Colonel M. J. Godfery, dated November 22nd, 1923, the following passage occurs:—"You would make a most valuable contribution to science if you could ascertain by what insects Romanzoffiana is fertilised. In Ireland the plant is so rare that there is little chance of finding this out; it is hopeless watching single plants, and Mr. St. Quintin's plants were never fertilised, and bore no capsules." Now most Orchid hunters know perfectly well that it is usually no sinecure watching for that particular insect, or insects, towards whose vital companionship the flower has been adapting itself, through the ages, looking to its own more certain perpetuation, as the late Wm. H. Gibson puts it in his "My Studio Neighbours," 1898, p. 173. But the Colonel had placed the matter so naively before me that escape seemed impossible, and so I made up my mind there and then to undertake the task at the first possible opportunity.

It so happened that this opportunity came on a Sunday (August 24th, 1924), not by premeditation, but simply because I happened to be taking a walk in the vicinity of the Romanzoffiana ground on the day in question, and the thought suddenly occurred to me that now or never was the time to solve the problem, as it was a fine sunny day, and I knew that many of the plants would be in full bloom. Suiting my action to the thought, I turned my steps in the direction of the wet slimy ground, not far from my house, in which I find Spiranthes Romanzoffiana growing. Then began the pathos of the whole thing, for hour after hour, in long rubber boots, under a burning sun, did I pace up and down that boggy ground, inspecting little colonies of flowers, with no results whatever, although all the other flowers associated with Romanzoffiana were being visited freely. Just as I was giving up all hope of success, I espied a small bee somewhat deeply embedded in one of the tiny blooms. It was then that I realised for the first time that I had left home totally unprepared for the work in hand, having no net of any kind with me, only two small tin boxes, and these I had left at the other end of the ground, with the largest and finest root of Romanzoffiana in one of them that I have ever found at this station. Off I rushed for these boxes, but before I arrived back the bee had vanished, and I was just on the point of giving the whole thing up as a bad business, when, as luck would have it, I caught sight of a much larger bee trying to force his way into every bloom of a particular spike of flowers not far off.

After watching this amusing sight for some little time I thought I would just have another look at the other plant before finally leaving, and there again, sure enough, was my little bee, deeply embedded in one of the blooms,

and whilst thus engaged I enclosed both it and the flower-head in the tin box. As I did so, I thought of the episode related by Kane in his "Catalogue of the Lepidoptera of Ireland," in which he tells of a friend, who, coming across a specimen of the rare Camberwell Beauty (Aglaius antiopa), settled on the roadside near Trillick, County Tyrone, refrained from capturing it because it was a Sunday! Alas! poor little bee, unlike the Camberwell Beauty, you live in an enlightened age, when so many wicked things are done on a Sunday!

"It never rains, but it pours," is a good old saying, and no sooner had I secured this little bee than I saw another on a flower not far off. Although about the same size as the other, it looked somewhat different, having more the appearance of the little villain about it, with long rakish horns sticking out

THE HOME OF SPIRANTHES ROMANZOFFIANA.

of its head. Nevertheless, as it entered one of the blooms I trapped it and the flower-head in the other tin box, the same as I had done the previous one. On arrival home, I was delighted to find that the first one captured had the pollinia of S. Romanzoffiana firmly attached to its head by means of the well-known little boat-shape disc. Not being familiar with bees, I sent them to Dr. J. McDunnough, Chief of the Division of Systematic Entomology at Ottawa, and this is his reply: "Your letter of August 25th and the two specimens of bees found on the Orchid, S. Romanzoffiana, sent for identification, reached me this morning. I immediately handed the bees over to our Hymenopterous specialist, Mr. H. L. Viereck, and he reports that the one with the pollen on its face is a female of Chlorhalictus smilacini, Rob. The other specimen is a male Halictes provancheri, and of course has nothing to do with the fertilising of the flowers. It was evidently just hanging around looking for trouble. As far as Mr. Viereck knows, the female Chlorhalictus is not found in Ireland, so it is evident that in that

country the fertilisation occurs through other species. We are retaining these bees for the National Collection with your kind permission."

Before closing, it may be interesting to mention some of the plants associated with S. Romanzoffiana in this little boggy station, some of which are visible in the first of the accompanying pictures. In the background, a belt of White Spruce (Picea canadensis), Tamaracks (Larix larcinia), and Cedars (Thuja occidentalis), can be seen, with a bed of tall Cat-tails (Typha latifolia) immediately in front, following which, it will be noticed, there is a mass of what at first sight appears to be white flowers, but which, in reality, is a bed of Cotton Grass (Eriophorum viridi-carinatum) and Sedge (Scirpus Hudsonianus). It is principally amongst these latter two that S. Romanzoffiana grows, in company with another Orchid, Liparis Loeselii, and such other plants as Joe Pye Weed (Eupatorium purpureum), Blue

COLONY OF 45 S. ROMANZOFFIANA.

Iris (Iris versicolor), Yarrow (Achillea millefolium), Blue Toadflax (Linaria canadensis) Turtle head (Chelone glabra), Thoroughwort (Eupatorium perfoliatum), Arrow-head (Sagittaria latifolia), Swamp Purple Aster (Aster puniceus), Golden-rods (Solidago canadensis and S. graminifolia), Heal-all (Prunella vulgaris), and the Marsh Fern (Thelypteris palustris).

From the solitary bush in the foreground of the picture there is a sharp rise, and it is the drainage from this higher ground that forms the little oozy bed in which S. Romanzoffiana so delights, as well as the Cotton Grass and Sedge, amongst which a colony of forty-five Romanzoffiana are seen growing in the second picture, which was taken just in front of the solitary bush, the slimy nature of the ground being indicated in the foreground. The fine plant of S. Romanzoffiana already referred to was taller than the one previously recorded from the dry ground at Coaticook, having a total height of 35 cm., the raceme being 13 cm., but the leaves and tubers were

neither as wide nor yet as thick, the former measuring 9-10 mm. in width, whilst the thickness of the latter did not exceed 6·5 mm.; nevertheless it is an exceptional plant for this station, the same as the other one was for Coaticook.

In conclusion, my best thanks are due to Dr. McDunnough and also to Mr. Viereck for his identifications, and I can only regret that my findings so far will not prove very helpful, I am afraid, to English and Irish collectors, as apparently the little bee Chlorhalictus is not to be found in Ireland; still they may serve to indicate other nearly related species that do occur there, and which some day I hope may be found fertilising Spiranthes Romanzoffiana in the land of Erin.

THE PAST AND THE PRESENT.

IT is a well-known fact that many kinds of Orchids succeed admirably in vineries. In past years considerable use was made of these spacious structures, for beneath the vines there was generally ample accommodation for large plants to be arranged with effect. In our last issue (p. 292) reference was made to the fine results obtained with Vanda cœrulea. Many excellent specimens of other genera have also been cultivated under similar atmospheric conditions, and their vigorous appearance, along with an abundance of flower, is not likely to be forgotten by all who saw them.

The following particulars are of plants cultivated in the collection of Mr. W. G. Joy, an amateur, who resided some years ago at Headingley, Leeds. Lælia crispa, four feet in diameter, 50 flowers: Cattleya Harrisoniana, three feet in diameter; Odontoglossum grande, two feet in diameter, 41 flowers; Dendrobium nobile, four feet in diameter, 400 flowers; Miltonia Clowesii, three feet in diameter, 100 flowers; Oncidium flexuosum, four feet in diameter, 40 spikes; and Dendrobium densiflorum, 44 spikes. Many of these plants were grown in tubs 2ft. 6in. wide and 1ft. deep. Although it is not improbable that some of these specimens had been imported as large masses, and consequently possessed considerable native vigour, every cultivator knows full well that after a year or so most species show a tendency to diminish in size and vitality. With the noteworthy vigour that is witnessed in nearly all present-day hybrids there is no reason why amateurs should not cultivate them to an even greater state of perfection than the specimens above described.

One cannot help appreciating the accuracy with which present-day sale catalogues are prepared, the number of bulbs and leading growths being generally included in each item, while water-colour drawings of the actual flowers are often available. Going back to early Victorian days, when plants came to England in old-time sailing vessels, and often in charge of members of the crew, all sorts of descriptions were attached to these much

sought after rarities. Even Ansellia africana was stated to produce flowers each as large as a tulip, and on another occasion an auctioneer had to deal with some Vandas whose flowers were described as of bright scarlet!

The remarks in our last issue, p. 291, concerning the difference between an Orchidophile and an Orchidologist, have caused not a few amateurs to seriously consider whether they belong to the former class or the latter. One amateur considers himself entitled to both descriptive terms, while another remarks that so far as Orchid growing is concerned in his own neighbourhood he is regarded as the pioneer. When, in 1875, Reichenbach received a flower of Odontoglossum Andersonianum he remarked:—"I have to thank for it Mr. Van Branteghem, who is the pioneer of Orchidophilia on the Bhosphorus at Constantinople." Well, so much for names of the past and the present. No doubt the future will bring other descriptive terms, for the raising of Orchids from seed, either with or without the assistance of fungus, is now carried on with such scientific accuracy that the whole industry has been entirely revolutionised.

In the days when hybrids were represented by scarcely a dozen popular kinds that could be obtained in quantity, a succession of bloom was by no means easily procured. The following list was made up some years ago as comprising suitable Cattleya species for sustaining a continuation of flower during the whole year:—January, Percivaliana; February and March, Trianæ; April, Schrœderæ; May and June, Mossiæ, Mendelii; July, Warneri; August, Gaskelliana, Warscewiczii; September, Dowiana; October and November, labiata; December, Percivaliana. Doubtless some little care would have been necessary in the cultural details to get some of these species in flower during the stated period, and several would probably have given a supply of bloom during more than one month. The genus Lælia would also have assisted with such fine things as purpurata in the spring months, and others could be mentioned. With the present-day multitude of hybrids there is always an abundance of flower in the spring and autumn months, in fact right through the latter season until Christmas. The only period when some scarcity is apparent being July and August.

ORCHID CATALOGUE.—Messrs. Stuart Low & Co. have recently issued a 32-page catalogue detailing a large number of species and hybrids. Twelve additional pages are filled with illustrations, the most interesting of which is probably that of Cattleya Suavior, Low's variety, obtained by crossing intermedia Aquinii with Mendelii, and described in the *Orchid Review*, vol. xxx, p. 203. The following page is occupied with a reproduced photograph of Cypripedium Parishii, a species discovered in the Moulmein district, in 1859, and now rarely seen in cultivation.

CULTURAL NOTES.

CYPRIPEDIUMS will all give a good return, and are one of the most satisfactory classes to grow, as not only is there a great variety to choose from, but they last longer than any other section in perfection, in fact, some of them are not at their best unless they are left to develop for a month or six weeks. Fog does not affect the flowers or bulbs as it does the more delicate class of Orchids. The flowers should be neatly staked and stood to face the sun, then they will not curl back as many varieties do when left with their back to the light. The plants should be carefully watered, and none of them should be allowed to get bone dry when they are pushing up their spikes, or they will throw small flowers, and thrip will soon make its appearance, and when once these make headway it takes two or three years to get rid of the disfigured leaves, which are unsightly and a constant reminder of carelessness on the grower's part. If the houses are fumigated each fortnight or so it will keep the plants clean, and if done at night helps to get rid of cockroaches as well. Plants in flower should be staged by themselves, and the rest should be syringed on fine days, and dull days, too, if the temperatures are kept right. Houses should be damped at least twice daily, and a little air given whenever possible.—*W. H. Morgan, November*, 1908.

The Resting of Orchids.—A few words on this important item will doubtless be found useful at the present time. In the first place it is safe to infer that all pseudo-bulbous Orchids require a rest at some period of the year in order to bring about the maturity in their growths, and also that they may recuperate after flowering, so that they will thus be ready for another growing season. To do this properly requires as careful consideration and attention as does the growing period. Therefore, when rest is implied it does not mean that absolute drought should be resorted to for long or short periods, but that the chief points to be remembered are little or no water, a lowering of the temperature, less moisture in the atmosphere, and last, but not least, more light where this can be obtained. It is easy to give either too much water or too little during the winter months, but very difficult to say when or how often to water, for the conditions of the weather and circumstances of each plant differ so much. The aim should be to give enough to keep the plant in plump condition; shrivelling of the pseudo-bulbs may be all right in some few cases, but excessive shrivelling must at all times be avoided. In varied and mixed collections it is often a difficult matter to give each individual plant an ideal position, but this may often be overcome by placing the various species by themselves, thus giving each section a position suitable for its requirements in the way of light and warmth.—*J. Mackay, November*, 1902.

ONCIDIUMS AND ODONTOGLOSSUMS.—A good many of the autumn and winter blooming Oncidiums are now in spike or in flower, such for instance as the old and favourite species, O. varicosum, O. tigrinum, O. Forbesii, O. ornithorhynchum, O. crispum, and O. Gravesianum. I generally find that if these species bloom during October they are alright in the coolest house, and may be left there to thoroughly rest for the remainder of the winter. But if the blooms have not yet expanded, they usually require a little more warmth than this department affords, so as to hasten them on and give them a chance of producing flowers of better quality, and at the same time of getting the heavy strain of blooming over more quickly, so that the plants may enjoy that winter's rest which it is so essential that these species should have. This applies also to some other cool Orchids that are now in spike, as Odontoglossum Edwardii and O. ramosissimum. O. grande and Insleayi will now have finished blooming, and should be allowed to rest. The proper application of the term "rest" is somewhat difficult to many beginners in Orchid culture, because the natural requirements of the different species and genera vary so greatly in this respect. It is a point on which a good many are apt to go a little wrong, and which has to be largely learnt by experience and practice. When this is gained, it is at once seen how simple the term is, and its due application to each individual species is less difficult. Some of our Dendrobiums and similar Orchids are, as we know, rested rigorously, and with capital results, but when we speak of resting such species as Oncidiums and Odontoglossums, it must not be taken as meaning that the same rigorous measures should be dealt out to them, but that they should be kept partially dry, and be allowed to repose in a quiet unexciting temperature, with only sufficient water at the roots to maintain plumpness. It is difficult to lay down rules on the subject, because the species, even of the same genus, often vary in their natural requirements, but a little observation will soon enable one to hit off the proper treatment. —*H. A. Burberry, November*, 1899.

PLEIONES.—These are amongst the few Orchids that have to be attended to this month. Most of these pretty species are natives of India, and grow chiefly on rocks in mountainous regions, and are commonly known as "Indian crocuses." Their flowering season extends from the end of September to the middle of November, and one species, P. humilis, blooms in the spring, consequently with the following species the flowering season is extended to a considerable length. P. lagenaria, P. maculata, and P. præcox are now in bloom with us here, and when care is taken that no water is allowed to settle on them they will last long in perfection, but if not kept free from moisture the blooms quickly damp off. Within a short time after flowering numerous young roots will be found to have started away from the base of the new growths, and it is at this particular time that the plants should be

turned out of their receptacles, and after the greater part of the old soil has been removed from the roots they should be repotted in a compost consisting of equal proportions of good fibrous loam and peat, with a little chopped moss, a small quantity of powdered cow dung, and sufficient coarse sand or fine crocks to keep the whole porous when mixed together. It is quite immaterial whether shallow pans or pots be used, but for those who prefer to grow them hanging up close to the roof, pans are the most convenient. Whichever be selected they should be well drained, for being fond of large quantities of water when the plants are in full growth it is necessary that the water should pass freely away. When everything is in readiness take a bulb, and with the old root form a little ball to aid in fixing the bulb firmly in the compost. Each ball should be so disposed that the growths as they advance have plenty of room to develop, and when completed will be placed evenly over the surface. The material should be raised slightly above the edge of the pan and mounted a little, though not conically, or watering them in the early stages of growth will be a difficult matter without wetting the growths. After re-potting they should be placed on a shelf at the coolest and most airy part of the Cattleya or Intermediate house to enable them to get all the light available. Water sparingly until the young growths are well advanced; but when the plants are thoroughly established they will take an almost unlimited supply, and an occasional dose of weak liquid manure water will be beneficial to them. Pleiones, when treated in accordance with their requirements, are very easy to cultivate, and producing, as they do, such beautiful little flowers at this time of year are very effective. They should be grown in the smallest Orchid collection.—*J. Mackay, November*, 1903.

Cypripedium insigne.—In nearly every garden where indoor plants are cultivated the old Cypripedium insigne will be found in bloom at this season. It has always been a general favourite amongst gardeners, owing to its vigorous constitution and easy culture, and as the handsome flowers remain fresh for a very long time, they are especially valuable for cutting and decorative purposes. At the present time there are a great number of C. insigne varieties in commerce, some of them better than others, and the best certainly deserve a place in the most select collections. In C. insigne Maulei and Chantini we have varieties that will take a lot of beating, but undoubtedly the most beautiful and distinct variety yet seen is C. insigne Sanderæ, which is, so far as at present known, only represented in three or four collections. The best time to repot C. insigne is immediately after flowering. It requires no special kind of compost, as I have seen it well grown and flowered when potted like an ordinary stove or greenhouse plant, and it will thrive in almost any house where frost is excluded, proper attention being given in watering, etc.—*W. H. White, December*, 1893.

ONCIDIUM VARICOSUM.

THE history of Oncidium varicosum goes back to the year 1837, when Lindley described it in the *Botanical Register*, sub. t. 1920, from a specimen in the herbarium of Dr. Martius. The plant is a native of Brazil, and was introduced to European gardens by M. de Jonghe, of Brussels, through Libon, who had rediscovered it growing on the trunks of large trees in the neighbourhood of Yta. In 1848 M. de Jonghe presented a plant to the Horticultural Society of London, and this flowered in the Society's garden at Chiswick in the following year. The specific name refers to the little ring of varicose veins on each side of the crest.

Oncidium varicosum Rogersii first appeared in the collection of Dr. Rogers, of East Grinstead, who exhibited it at one of the meetings of the Royal Horticultural Society in the late autumn of 1868, when it received a First-class Certificate. Apart from the extra-large size of the individual flowers, this variety is distinct on account of the three deep clefts in the margin of the lip, thus rendering it four-lobed. Having regard to the large number of plants that have since been imported of this particular fine type, it may safely be regarded as a permanent variation, or even a geographical form. On the other hand, it is not sufficiently different to be considered a distinct species under the name Oncidium Rogersii.

Oncidium varicosum concolor may here be mentioned. It is rendered distinct by the entire absence of the red-brown markings on the sepals and petals. Messrs. Stuart Low & Co. have had it under cultivation for more than sixteen years, which is somewhat remarkable when the poor constitution of this plant under artificial conditions is taken into consideration.

Three other varieties of outstanding merit have been certified: Oncidium varicosum giganteum, exhibited by Sir Fredk. Wigan, May 19th, 1896; O. varicosum, Westonbirt variety, shown by Lieut.-Col. Sir George Holford, October 21st, 1913; and O. varicosum Charlesworthii, exhibited by Messrs. Charlesworth & Co., May 28th, 1902. The first and second each received an Award of Merit, the third a First-class Certificate, in all cases from the Royal Horticultural Society. The large size of their flowers indicates that they belong to the Rogersii section.

Oncidium varicosum insigne. We now come to the consideration of varieties which have a reddish, or red-brown area on the labellum, near the crest. In the *Orchid Review*, 1898, p. 27, reference is made to certain varieties which had flowered in the collections of the Royal Botanic Gardens, Glasnevin, of Mr. H. Druce, St. John's Wood, and of Mr. Wm. Brookes, Weston-super-Mare. In each case the flowers had similar blotches of colour on the labellum. Rolfe considered them worthy of a distinguishing name, and this he accordingly gave in O. varicosum var. insigne. The

small sepals and petals were much more deeply coloured than in the normal type.

Oncidium varicosum Lindenii, A.M., R.H.S., December 5th, 1899, also belongs to the insigne section, the labellum being similarly marked with reddish colour. O. varicosum moortebeekense was shown by M. Lucien Linden at the Royal Horticultural Society, December 17th, 1901, and was subsequently figured in the *Gardeners' Magazine*, 1902, p. 177, and in

ONCIDIUM VARICOSUM ROGERSII.

Lindenia, t. 767. The reddish colouring in this particular variety appears to be much more intense and to cover a larger area.

At a meeting of the Royal Horticultural Society held on October 7th last, Messrs. Sanders exhibited two interesting varieties. One named O. varicosum apiatum, evidently belonging to the original type, so far as the smaller flowers and the formation of the labellum are concerned, differs in having a reddish area around the crest. It belongs to the insigne section, and on comparison being made with the Lindenii variety, by means of a coloured drawing from the Society's collection, it was found that, although

both plants were very similar, there is just sufficient distinction for not including them under the same varietal name. The other plant bore the name O. Rogersii xanthum, on account of its large size and clear yellow colour. In the four-lobed labellum it agrees well with the fine variety usually seen flowering during the autumn months and universally known as O. varicosum Rogersii.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Alderman	Bc. Nestor × C. Dowiana aurea	Flory & Black.
Brassolæliocattleya bletchleyensis ...	Lc. Canhamiana × Bl. Helen	Sir H. Leon, Bart.
Brassolæliocattleya C. W. Matthes ...	Blc. The Baroness × C. Maggie Raphæl ...	Stuart Low.
Cattleya Etta	C. Mrs. J. Ansaldo × C. Warscewiczii ...	Flory & Black.
Cattleya Mrs. J. Ansaldo	C. Adula × C. Warscewiczii	,, ,,
Cattleya Rubicund	Alexandra × Rhoda	,, ,,
Cattleya Sunstar	Sibyl × Triumphans	Cowan.
Cattleya Wembley	Peetersii × Alexandra	Flory & Black.
Læliocattleya Aviateur Tivolo ...	Lc. Fresnaie × C. Schrœderæ	M. le Blevenie.
Læliocattleya Jean	Lc. Thyone × C. Adula	Flory & Black.
Læliocattleya July	C. Fabia × Lc. St. George	Sanders.
Læliocattleya Prudence	Lc. Soulange × C. Rhoda	Flory & Black.
Læliocattleya Robina	Lc. Robin Measures × C. Dowiana ...	Stuart Low.
Læliocattleya Troubadour	Lc. Teucra × C. Empress Frederick ...	Flory & Black.
Odontioda Juliana	Oda. Brewii × Odm. Pescatorei	Charlesworth.
Odontioda Montana	Oda. Wilsonii × Oda. Joan	,, ,,
Odontioda Phidias	Oda. Elsie × Odm. Aquitania	,, ,,
Odontoglossum Arcansas	Fascinator × crispo-Solon	,, ,,
Odontoglossum Camilla	Penelope × Georgius Rex	,, ,,

MR. J. H. WALKER.—We much regret to record the death of Mr. John H. Walker, of Pendleton, Manchester, the result of a motor car accident. Mr. Walker was Honorary Treasurer of the Orchid Club and a well-known amateur cultivator of Orchids. His age was 49.

ODONTOGLOSSUM KRAMERI.—This pretty species was exhibited by J. McCartney, Esq., of Bolton, at the meeting of the Manchester Orchid Society, September 19th, when it received an Award of Merit. It was originally introduced in 1868, from Costa Rica, through Carl Kramer, and received a First-class Certificate when shown at the Royal Horticultural Society on August 4th of that year. It is a rare plant, being restricted to localities on the mountain slopes from Costa Rica to Veragua. The wax-like flowers, resembling those of O. citrosmum, are tinged with violet-rose. O. Krameri albidum, with pure-white sepals and petals, the blade of the labellum of delicate pink, was formerly in the collections of Sir Trevor Lawrence and Mr. Walter Cobb. It is very gratifying to see this charming species again in cultivation, and it is hoped that the plant may be carefully propagated so that other amateurs may include it in their collections. An increasing interest is being taken in species, and this is not surprising when their history and special attractions are considered.

MILTONIA SCHRŒDERIANA.

THIS species was first imported by Messrs. Sanders, from Central America, some time prior to 1885, for in January of that year a plant was exhibited by Baron Schröder at a meeting of the Royal Horticultural Society. When described, in 1887, it was classified as an Odontoglossum,

MILTONIA SCHRŒDERIANA.

but two years later Mr. Jas. O'Brien correctly referred it to the genus Miltonia. The pseudo-bulbs are ovoid-oblong, 1½-2 inches long, and generally two-leaved. The erect scapes bear from 9-12 flowers, each about 2½ inches across vertically, and usually fragrant. The sepals and petals are chestnut-brown tipped and marked with light yellow; the labellum milk-white, the basal half stained with rose-purple, and the crest consisting of three protuberances with a shallow raised line on each side of them; the column bears two very narrow wings. Its cultural needs will best be met by a position in the intermediate house.

A SELECTION OF BULBOPHYLLUMS.

THE genus Bulbophyllum contains many highly interesting species and it is gratifying to note that increasing attention is being given to their cultivation in several gardens. To appreciate their quaint characters to the fullest extent it is necessary to view the plants when in flower, and on this account a visit to the celebrated collection of Sir Jeremiah Colman, Bart., at Gatton Park, Surrey, affords unrivalled opportunity, for there one can see not only the most attractive members of the genus, but also a large number of rarities, several of which are not represented in other amateur's collections.

Bulbophyllum Gentilii is a remarkable Tropical African species that has the character of producing viscid pearl-like drops of nectar from the back of the dorsal sepal. The nectar is quite sweet, and probably plays some part in attracting insects by which the flowers are fertilised. It is allied to B. calamarium, and has been distributed under that name. Its earliest record seems to be September 1894, when it flowered with M. Van Imschoot, Ghent, but it was not described until ten years later. Capt. Lawrence collected a plant in West Africa, and sent it to his father, Sir Trevor Lawrence, in whose collection it flowered in 1912.

B. lemniscatum was discovered by the Rev. C. Parish on an old shingle roof at Zwakabin, in Moulmein, as long ago as 1868. In 1872 it flowered at Kew, when Sir Joseph Hooker remarked: "A more singular little gem of an Orchid cannot well be imagined. Its curious glossy, tubercled pseudo-bulbs, its capillary scape, with the long inflated upper sheath, its pendulous spike of of glistening minute flowers, and above all, its slender appendages that hang over from the back of each sepal, are as curious in structure as beautiful in colouring."

B. lemniscatoides is very similar to the above in having three pendulous appendages, one from the back of each sepal, though in other details the two are very distinct. It originally appeared in the collection of Mynheer Van Lansberge, Holland, having been imported from Java, but it was not until 1908 that it was seen again, and then in the collection of Sir Jeremiah Colman.

B. Dayanum was originally described in the *Gardeners' Chronicle*, 1865, p. 434, from a plant which flowered with Mr. John Day, at Tottenham, and which had been imported by Messrs. Low & Co. It was exhibited by the Hon. Walter Rothschild at the Royal Horticultural Society, January 12th, 1897, and given a Botanical Certificate.

B. auricomum is a native of Burmah. According to the Rev. C. Parish it is called Ta-zeen-ban by the Burmese, and that it is a great favourite with the girls, who put it in their hair, as it is pleasantly fragrant, like new

mown hay. The sepals are pure white, as also are the very small petals, and the lip bright-yellow.

B. inflatum was described as a new species by Rolfe in 1891. It flowered in the Kew collection in 1889, having been received from Sierra Leone two years previously. It is allied to B. comatum, but differs in having the rachis swollen in a remarkable manner, forming a solid fleshy body on which the flowers are densely arranged. The racemes take the form of pendulous egg-shaped masses of yellowish-green, hairy flowers. The sepals are strongly keeled, and these keels break up into long hairs.

B. cocoinum is a West African species whose history is thus recorded: "A pretty little species of this extensive genus, imported by Messrs. Loddiges from Sierra Leone. It is related to B. recurvum, tetragonum, and the others in the neighbourhood, but is readily known by the flesh-coloured flowers, the serrated petals, and the concave, short lip, filling the house with the scent of a cocoa-nut." Described and figured in the *Botanical Register* in 1837 (t. 1964).

B. Lobbii was described in 1847, by Lindley, who remarked: "How fine a plant of its kind this is may be surmised by its having been taken for a Cœlogyne. The flowers are yellow, shaded with cinnamon, spotted with light brown, and speckled outside with brown-purple. They are full four-inches across." It is figured in the *Botanical Magazine* (t. 4532), with the record: "Our drawing was made from the plant of Messrs. Veitch, after it gratified the public at the May Exhibition of the Chiswick Gardens for 1850."

B. Dearei appeared in 1883, being exhibited at the R.H.S., South Kensington, by Lt.-Col. Deare, of Englefield Green, Surrey. On May 28th, 1890, it received an award of Merit from the Royal Horticultural Society when exhibited by Baron Schröder. It has ever since been a popular plant in all amateurs' collections. A fine form of this species was shown by Messrs. Sanders on June 24th, 1890, under the name Sarcopodium Godseffianum, when a First-class Certificate was awarded.

B. Ericssoni is a truly remarkable species, as may be seen in the illustration given in the *Orchid Review*, 1907, p. 233. It was discovered by Ericsson, when collecting for Messrs. Sanders. Early in 1897 it flowered for the first time in cultivation, in the collection of the Hon. Walter Rothschild, at Tring Park. Two years later it flowered in the collection of Sir Trevor Lawrence, when Mr. White observed that "the flowers close partially at night, and open again in the morning."

B. virescens was described by Dr. J. J. Smith, of the Buitenzorg Botanic Garden, and afterwards figured (*Ic. Bogor.*, ii., p. 99, t. 119). It is allied to B. Ericssoni, and the flowers are pale green with darker veins.

B. mirum was figured and described in 1906 by Dr. J. J. Smith

(*Ic. Bogor.*, ii. t. 216). The petals form the really remarkable feature of the species, as they each consist of a small rounded disc, on the back of which is situated a tuft of about fifteen to seventeen mobile linear filaments, which protude from the angle formed by the sepals, and wave about with the slightest breeze. The character is evidently connected in some way with the fertilisation of the flower by insects.

DR. R. N. HARTLEY.—The passing away of Dr. R. N. Hartley, after an operation, removes another well-known amateur cultivator of Orchids. As a Vice-President of the Manchester Orchid Society, and a member of the committee of The Orchid Club, Dr. Hartley gave much assistance to the cause of Orchidology. He resided at Pemberton, Wigan.

DR. WM. B. HEMSLEY.—We regret to record the death of Dr. William Botting Hemsley, LL.D., F.R.S., which took place at Broadstairs on October 7th. Born on December 29th, 1843, he joined the staff at Kew at the age of 17, and subsequently became Keeper of the Herbarium and Library. His contributions to scientific journals comprise papers on geographical botany and insular floras.

ODONTOGLOSSUM GRANDE.—Some remarkable results in the cultivation of Odontoglossum grande have been obtained by Mr. C. F. Potts, Orchid grower to J. McCartney, Esq., Hey House, Bolton, by whom they were exhibited at the recent Southport Show. The finest plant bore a total of 23 flowers, while others had far more than the usual number. Some of the spikes each carried as many as eight flowers. Measurements taken of one of the best spikes proved that it was 13 inches from the base to the lowest flower, and 18 inches to the apex. It carried nine flowers, each measuring 6½ inches in width, the whole making a most attractive object of brilliant colours. Mr. C. F. Potts well deserved the Cultural Certificate presented to him by the Manchester Orchid Society on September 19th.

ONCIDIUM RANIFERUM.—First introduced from Brazil in 1837 by Knight, and shortly afterwards found by Gardner on the Organ Mountains, whence it has since been imported along with other plants. Sir W. J. Hooker described it as a sprightly little Orchidaceous plant, and Lindley remarked that the flowers are too diminutive to render this useful to cultivators; they are wholly yellow, except the crest and base of the lip, which are reddish-brown. Sometimes the panicle becomes leafy, with a few scattered flowers only at the end of its branches. The specific name, a fanciful one, meaning frog-bearing, was suggested by the form of the crest, which somewhat resembles the figure of a frog.

VANDA HOOKERIANA.

VANDA Hookeriana is the subject of two illustrations in the *Gardeners' Chronicle*, October 11th, 1924. The accompanying note states that "this beautiful Orchid, introduced from Borneo in 1882, has flowered at Tring Park during August of the present year and this is the second time

VANDA HOOKERIANA.

he species has flowered there during forty-two years." In the *Gardeners' Chronicle* of October 14th, 1882, the date of introduction is given as 1873.

Messrs. Veitch remark in their *Orchid Manual* (published in 1891), that "it was not until 1879 that a very few living plants at length reached this country, and these were received by us from a correspondent at Labuan, and were immediately afterwards acquired by Lord Rothschild." This date is apparently a misprint, the intended figures being 1873. And further "None of them could be induced to flower till September, 1882, but since

that date the flowering of Vanda Hookeriana has been an annual occurrence at Tring."

Vanda Hookeriana also flowered about the same time in Mr. J. S. Bockett's collection at Stamford Hill, from whose plant the plate in the *Orchid Album* (t. 73) was prepared and published in 1883.

Flowers from the Tring Park plant were the subject of a coloured plate in *The Garden*, January 6th, 1883. The descriptive article being by "F.W.B.," who remarked: "On referring to a sketch I made in the Botanical Gardens in Singapore in August 1877, I find the spike which the curator allowed me to cut had only one flower open, and that near the end of the spike, the extreme end of which bore two or three of its singular sharp-angled buds, each bud bearing two curious tail-like points at its apex. But then this spike has been blooming for some time, having already borne six or seven flowers. One singular trait of this and many other Orchids, as seen wild or 'at home,' is the gradual development of their indefinite inflorescence. Under cultivation this is not so evident; the flowers, being protected from rain, wind, and insect agency, endure fresh and fair for a much longer period; hence it is not uncommon to see every flower on the spike of a Vanda open at the same time in our Orchid houses."

Further interesting information concerning this species appeared in *The Garden*, August 30th, 1890, in which issue Major F. Walker, of Perak, remarks: "This district is thickly studded with marsh. These marshes are full of thick low undergrowth, no more than five feet high, and quite or almost bare of forest. They are, therefore, exposed to the full rays of the sun. In some of these marshes Vanda Hookeriana is found creeping over the undergrowth. The stems seem to rest on the tops of the bushes and the suckers cling gently to them. The flower is always to be seen on the top of the bushes, away from all shade, in the blazing sun. It flowers all the year round. It is no uncommon sight when staying in Kinta to find the dining-table covered with these flowers. So common is this flower in the district that it is called the Kinta Weed."

R. H. S. AMATEUR FLOWER SHOW.—On Tuesday and Wednesday, June 30th and July 1st, 1925, the Royal Horticultural Society will hold an Amateur Flower Show in the Society's Hall, Vincent Square, Westminster. Two classes are provided for Orchids: one for 12 pots, 12 varieties, First Prize, £5; Second Prize, £3; Third Prize, £2; the other for 6 pots, 6 varieties, First Prize, £3; Second Prize, £2; Third Prize, £1. Additional points will be awarded by the judges to those exhibitors who include the greatest number of genera. A certain number of the Society's Medals will be awarded at the discretion of the Council to outstanding exhibits in addition to the money prizes.

ROYAL HORTICULTURAL SOCIETY.

October 7th, 1924.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, J. Wilson Potter, Richd. G. Thwaites, A. McBean, John Cowan, Ernest R. Ashton, W. J. Kaye, A. Dye, J. E. Shill, H. G. Alexander, Chas. H. Curtis, Henry H. Smith, H. T. Pitt, Fredk. J. Hanbury, and S. W. Flory.

FIRST-CLASS CERTIFICATES.

Læliocattleya Sargon var. Gloriosa (Lc. Lustre × C. Hardyana) ; from Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander). A remarkable exhibit, both on account of the large size of the plant and the attractive nature of the flowers. The spike bore four immense flowers, each measuring nine inches across, the petals four inches broad, and the whole making a splendid display of rosy-mauve colour. The broadly developed labellum is shaded with ruby-crimson, while the throat is veined with gold.

Læliocattleya Profusion var. Arabic (Lc. Serbia × C. Hardyana); from Messrs. J. & A. McBean. A further example of the good qualities possessed by this newly-produced hybrid. The spike carried four flowers, compactly arranged, the segments of mauve-pink colour, the large and roundly formed labellum ruby-purple, prettily crisped at the margin, and having a yellowish area on each of the side lobes.

OTHER EXHIBITS.

As the Society's Hall was on this occasion reserved for the Autumn Fruit Show, groups of plants were not admitted. The following Orchids were, however, exhibited in the annex: Messrs. Sanders staged Oncidium Forbesii var. coloratum, with a many-flowered spike; On. varicosum Rogersii var. xanthum, of pure-yellow colour; and On. varicosum var. apiatum, in which the sepals and petals are spotted with a deeper red-brown colour than in the type, while the labellum bears a reddish blotch near the crest area.

Messrs. Stuart Low & Co. exhibited Læliocattleya Mrs. Medo var. Ruby, yellow, with ruby-crimson labellum; and Brassolæliocattleya C. W. Matthes (Blc. The Baroness × C. Maggie Raphael alba), the flower being bronze-yellow, the broadly expanded labellum ruby-red.

Messrs. Flory & Black staged Brassocattleya Princess Patricia, an attractive flower; a Læliocattleya obtained by crossing Lc. Mrs. J. Ansaldo with C. Warscewiczii var. F. M. Beyrodt, and yielding pure-white sepals and petals, the labellum bright Tyrian-purple ; Lc. Jean (Lc. Thyone ×

C. Adula), of bronze-yellow colour, except for the purple lip; and Lc. Colmaniana var. Vivid, a richly coloured form of this well-known hybrid.

Baron Bruno Schröder (gr. Mr. J. E. Shill), exhibited a cut-flower of a promising novelty obtained by crossing Sc. Faboris with Blc. The Baroness. The colour was rich yellow.

R.H.S. AUTUMN ORCHID SHOW.

THE special Autumn Show of Orchids was held at the Royal Horticultural Society's Hall on Tuesday and Wednesday, October 21st and 22nd, when several exceptionally fine groups were exhibited. Cattleyas predominated, and were well up to the usual standard, notwithstanding the absence of summer weather during the past few months. The Challenge Cup offered by Baron Bruno Schröder was awarded to Lieut.-Col. Sir George Holford, K.C.V.O., and the challenge Cup given by members of the Orchid Trade was won by J. J. Joicey, Esq.

Members of the Orchid Committee present: Sir. Jeremiah Colman, Bart. (in the Chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, J. Wilson Potter, C. J. Lucas, J. E. Shill, F. J. Hanbury, A. Dye, H. G. Alexander, H. T. Pitt, F. K. Sander, H. H. Smith, C. H. Curtis, A. McBean, T. Armstrong, John Cowan, S. W. Flory, J. Cypher, and Richd. G. Thwaites.

FIRST-CLASS CERTIFICATES.

Læliocattleya Queen Mary var. Colossal (C. Peetersii × Lc. Lustre), from Lieut.-Col. Sir George Holford, K.C.V.O. This handsome plant bore a couple of very large flowers, the sepals and petals broadly formed, of soft purplish-rose colour, the immense labellum crisped at the margin and of deep crimson-purple.

Læliocattleya Queen Mary, Westonbirt variety, from Lieut.-Col. Sir George Holford. The spike carried three finely developed flowers, of rosy-mauve colour, the labellum broadly shaped and richly coloured.

AWARDS OF MERIT.

Læliocattleya Queen Mary var. Gloriosa, from Lieut.-Col. Sir. George Holford. A fine hybrid of deep rose-purple colour, the expansive labellum dark crimson-purple and with a yellowish disc on each of the side lobes.

Læliocattleya Golden Light, Westonbirt variety (Lc. Golden Fleece × Lc. luminosa aurea), from Lieut.-Col. Sir George Holford, K.C.V.O. A vigorous plant with an erect spike of four large flowers, the segments rather narrow, but rendered attractive by their bright yellow colour; the labellum tinged with crimson on each side, the front lobe clear yellow.

Cattleya Clive var. ardentissima (Adula × Idris), from Messrs. Sanders. This fine result carries forward the good qualities of both parents, the

flower having erect and broadly formed petals of mahogany-red colour, the broadly expanded labellum rich purple.

Læliocattleya Linda var. superba (C. aurea × Lc. Arachne), from J. J. Joicey, Esq., The Hill, Witley, Surrey. A handsome flower of large dimensions, of a peculiar bronze-rose colour, the influence of L. tenebrosa derived through the latter parent being mainly responsible. The widely expanded labellum rich rosy-purple, stained with crimson.

Odontonia Stelpæ var. maculata (M. Bleuana × O. Harwoodii), from H. T. Pitt, Esq., Rosslyn, Stamford Hill. A large flower, the segments somewhat narrow, but of bright yellow colour, spotted with red-brown.

Brassolæliocattleya Alfred Mollet var. Vivid (Blc. Morna × C. Hardyana), from H. T. Pitt, Esq. An attractive hybrid with prettily formed flowers, the sepals and petals purplish, the large labellum deep purple.

Cattleya Pyramus var. Colossus (Lc. St. Gothard × C. Thurgoodiana), froom H. T. Pitt, Esq., Rosslyn, Stamford Hill. In this elegant result the characters of both parents are well balanced, formation and colour being effectively represented.

Læliocattleya Nanon var. Zebra (Lc. Ivanhoe × C. aurea), from J. J. Bolton, Esq., Claygate, Surrey. The spike bore three large flowers, the petals stained with bright purple, thus resembling the labellum in this respect, but with a narrow rose-tinted margin. A very effective character that appears to be constant.

Odontoglossum majesticum var. Admiration (percultum × eximium), from Messrs. J. & A. McBean. Flowers well formed, thick in texture, and handsomely blotched with rose-purple, the petals displaying a lighter tinted area in the centre.

Groups.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt, Tetbury, Glos. (gr. Mr. H. G. Alexander), was awarded the Baron Schröder Challenge Cup for a magnificent exhibit of Cattleyas and other Orchids, the excellent condition of the plants securing for their cultivator a Silver-gilt Lindley Medal. In addition to several superb forms of Læliocattleya Queen Mary which received certificates, there were excellent examples of Lc. Cappei, with reddish flowers, of Lc. Morvyth, of dark purple colour, and of Lc. Sargon, with three immense flowers of golden hues. Cattleya Peetersii alba bore two spikes with a total of nine flowers, C. Fabia carried a spike of seven flowers, and C. Fabia majestica had four richly-coloured blooms. C. Armstrongiæ showed up well, as did the pure-white C. Astron and C. Dirce magnifica. Brassocattleyas were especially good in heatonensis alba, with three lightly-coloured flowers, and in Olympus with immense flowers of pleasing colour. Two handsome Cypripediums were staged in Shogun

and Viking, while Cymbidium Hanburyanum and a large number of other attractive hybrids came in for considerable appreciation.

Messrs. J. and A. McBean received a Gold Medal for a meritorious group containing many excellent hybrids. The centre was formed with tall spikes of Oncidium ornithorhynchum and O. incurvum album, alongside of which was a spike of Odontoglossum Topaz measuring seven feet in length. Læliocattleya Profusion var. Homeric bore large flowers with roundly formed segments, and Lc. Linda had flowers of rosy-flesh colour. Cattleya Empress Frederick and C. Fabia were also finely staged, while C. Annette had four large white flowers, the labellum purple, and C. Prince John flowers of golden-yellow, the lip bordered with bright rose. At one end was a grand form of Lycaste Skinneri with large flowers, at the other end the elegant Cymbidium erythrostylum and C. Orion. Several plants of Cochlioda vulcanica were seen, also Miltonia Rœzlii and M. Isabel Sander. Brassocattleyas were finely staged in British Queen var. Admiration, and in Lisette, several of which were seen in richly-coloured varieties. Various Odontiodas and Odontoglossums were in prominent positions, and mention may be made of Trichopilia nobilis, and some well-flowered plants of Oncidium Forbesii.

Messrs. Sanders received a Gold Medal for an exceptionally fine exhibit, the whole of the background being made up of the brilliant yellow Oncidium varicosum, in front of which were fine examples of Vanda cœrulea, making a striking contrast of colour. In prominent positions were many handsome varieties of Brassocattleya Ilene, as well as some dark varieties of Cattleya Fabia. A pretty effect was produced by masses of Cypripedium Fairrieanum, and of the chestnut-brown Oncidium Forbesii. Phalænopsis Rimestadiana and Cymbidium erythrostylum were included, also Miltonia Bluntii, the elegant Oncidium bicallosum and On. Papilio. Læliocattleya Ettrick var. Bonzo, with buff coloured sepals and petals stood out well, while another distinct hybrid was seen in Lc. Roulers. Many of the best Cypripediums were included, large plants being staged of Maudiæ and the popular insigne Sanderæ. Plants of botanical interest were seen in Oberonia iridifolia and various Maxillarias.

J. J. Joicey, Esq., The Hill, Witley, Surrey (gr. Mr. J. Mackay) won the Challenge Cup offered by members of the Orchid Trade. This exhibit was boldly arranged and contained an attractive variety of Læliocattleya Linda, also fine forms of Lc. Don Juan and Lc. Maudiæ, the latter with golden coloured flowers. Among the Cattleyas were excellent examples of Dowiana aurea, of Bellona, and of Caroline, the latter having petals with prettily crisped margins. C. President Wilson bore elegant flowers, white, with coloured lip, and Brassocattleya Sofrano had flowers of saffron-yellow tints. The pretty Vanda Kimballiana and Platyclinis Cobbiana were seen in two finely

cultivated specimens. Cypripediums included several large plants of J. H. Veitch, Maudiæ, concolor and Fairrieanum, while Saccolabium Blumei and Maxillaria picta were also staged. Odontioda Automa bore flowers of deep crimson colour, and Odm. Aphrodite was also an attraction. The charming Cirrhopetalum miniatum and the graceful Cœlogyne Veitchii were among the rare species.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver-gilt Banksian Medal for a neatly arranged group containing a wide selection of species and hybrids. Among the former were finely grown plants of Maxillaria lepidota, Pleione lagenaria, various Cypripediums, and Odontoglossum grande, in Pitt's variety of which the flower is almost yellow. Cattleyas were represented by the fine amabilis alba, with pure-white sepals and petals, and selected forms of Fabia. Læliocattleya Don Juan was also an attractive plant Potinara Royal Purple carried three large flowers of intense rosy-mauve colour. Miltonias were represented by several of the newer hybrids, such as Beau Brummell and Wm. Pitt, the latter with crimson-tinted segments. A pleasing yellow flower was staged in Odontoglossum Wiganianum, and another in Odontonia Stelpæ, which had segments of yellow colour, spotted with red-brown. Several Cypripediums were effectively arranged, that known as Triumphans, being in fine condition.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), was awarded a Silver-gilt Banksian Medal for a very pretty arrangement of rare species and handsome hybrids. Along the back were superb examples of Cattleya Beryl, with many-flowered spikes, also of C. Browniæ, equally well flowered. Bright spots were created by Cattleya Venus, while C. Fabia yielded various shades of purplish-mauve. In the centre was a large plant of Læliocattleya Lady Moore (C. labiata × Lc. Epicasta), beautifully formed and of delicate coloration. Another fine hybrid was staged in Blc. Antoinette, with roundly-formed flowers. Interesting species were seen in Cirrhopetalum Fascinator, C. ornatissimum, and the handsome Angræcum Eichlerianum. There were also finely grown examples of Bulbophyllum Careyanum, of Rodriguezia secunda, and of Bulbophyllum barbigerum. Cattleya labiata leucochila bore flowers of soft-rose colour, the labellum whitish.

Messrs. Cowan & Co., obtained a Silver-gilt Banksian Medal for an attractive exhibit of Cattleyas, including several specially fine forms of amabilis alba, dark varieties of Fabia, richly coloured flowers of Moira, and Lady Veitch. Among the Læliocattleyas were pretty forms of luminosa aurea, with golden-yellow sepals and petals, Hassallii alba, pure-white, except for some purple on the lip, and the new Pandora, obtained by crossing C. Fabia with Lc. Marmion, a promising batch. Brassocattleya

British Queen carried a couple of very large flowers, the labellum beautifully fringed, while Blc. Thyone had flowers of yellow colour. Odontiodas were well represented in Brackenhurst, with a branched spike of reddish flowers, in Tacita, with numerous flowers, of deep crimson-red, and in Murillo, large and richly coloured. Odontoglossum Glorina and O. crispum xanthotes stood out prominently, as also did a fine example of O. Uro-Skinneri, with a tall spike. Vanda cœrulea was well flowered and made a pleasing contrast with its blue-tinted flowers. Cattleya Aeneas, bore blooms of bronze-yellow colour. Miltonia Charlesworthii carried several handsomely blotched flowers, while Cypripediums were numerously represented, Dreadnought, Maudiæ and Fairville being in excellent condition.

Messrs. Stuart Low & Co. were awarded a Silver-gilt Banksian Medal for an attractive exhibit. In the centre was a fine variety of Miltonia Bluntii, and another of M. spectabilis Moreliana, while on each side were strong plants of Odontonia brugensis, with many-flowered spikes. Cattleyas were represented by Adula, Glebe variety, richly coloured, and by Abekeniæ, with flowers of soft rosy tints. Læliocattleyas included a wide selection, the best being Ortega, of rosy-flesh colour, luminosa Aurea, of varying shades of golden-yellow, and Britannia alba, with pure-white sepals and petals. Brassocattleya Poilu, with a spike of four well-coloured flowers came in for admiration, and interest was taken in Stanhopea Wardii and Rodriguezia crispa. The Odontoglossums embraced the richly coloured Woodroffeæ, as well as Cordoba and Doris, the two latter having many flowers. Dendrobium nobile virginale and various Cymbidiums were effectively displayed. Among the attractive Cypripediums were strongly grown examples of Chrysostum giganteum, with an immense flower, and of Edwin S. Webster, the latter of finely formed shape, and well coloured.

Messrs. Cypher & Sons were awarded a Silver Banksian Medal for an extensive collection of Cypripediums, all showing excellent cultivation. Among the noteworthy varieties were several of Maudiæ, Rossettii, and the Westonbirt variety of Bianca. Cyp. Elatior bore several handsome flowers, and the well-known hybrid called St. Alban also stood out prominently. Other noteworthy plants were staged in Dendrochilum Cobbianum, with many pendulous spikes, and in several interesting Masdevallias. Cattleya Portia magnifica and C. Peetersii were in fine form, while a large flowered hybrid was staged in Brassolæliocattleya Winson, with the labellum unusually well coloured. Odontoglossum grande added some pretty points with its large flowers of yellow and reddish-brown colours.

Mr. Harry Dixon secured a Bronze Banksian Medal for a well arranged group, in which Cattleya labiata var. Mrs. E. Ashworth attracted attention. Other members of the genus were seen in C. Adula, richly coloured, and in

Lc. St. George, obtained by crossing C. Fabia with Lc. St. Gothard. Among the Brassavola hybrids were several distinct varieties of Bc. Nestor, and of Safrono, the latter of a pretty saffron-yellow colour. Brasso-læliocattleya Veitchii was prominent with its large flowers and fringed labellum. Cypripediums included several of the popular kinds, such as insigne Sanderæ, Maudiæ, and the handsome Pallas Athene. Another attraction was Dendrobium Phalænopsis, and several hybrids of Odonto-glossum Rossii.

Leonard Dixon, Esq., Pitlochrie, St. Albans, received a Bronze Banksian Medal for a group of Cypripediums, including the charming hybrid known as Gwen Dixon, to which an award of Merit was given last year. Other noteworthy plants were Cyp. Goliath, Maudiæ, The Queen, with primrose-yellow flowers, and well-grown examples of Odontoglossum eximium and O. crispum xanthotes.

Sir Herbert S. Leon, Bart., Bletchley Park, exhibited Cypripedium J. T. Barker, a handsome flower, produced by crossing Shogun with San-Actæus.

Messrs. Armstrong & Brown were accorded a Special Vote of Thanks for a select group, comprising the famous Odontoglossum Armstrongii, which on this occasion was better than ever, the chief point of interest being that yellow spotting was now present on the dorsal sepal. The petals each bore a large blotch of lemon-yellow colour. Other noteworthy plants were Cattleya Venus, of bright colour, C. Empress Frederick, equally fine, and C. Enid var. Our Queen, with broadly formed segments, pure-white, except for the purple area on the labellum. Also Læliocattleya Ensign, and a fine variety of Lc. Schrœderæ, with a spike of four large flowers. A specially interesting plant was staged in a grand specimen of Vanda luzonica, bearing three many-flowered spikes.

MASDEVALLIA COCCINEA.—This species was first discovered in 1842-3, on the southern slopes of the high mountians near Pamplona, at 9,500 feet elevation, by Linden, from whose herbarium specimen it was described by Lindley. The typical M. coccinea was introduced in 1869, in which year in was re-discovered by Gustav Wallis, and sent by him to M. Linden, in whose establishment at Ghent it flowered for the first time in Europe in June of the following year. From a horticultural point of view, the variety Harryana is far superior, the flowers being distinguished chiefly by the two lateral sepals that are dilated into broad oval-falcate blades, which in colour range from deep sanguineous purple to pale yellow or milk-white. It was discovered by Chesterton, in 1871, near Sogamosa, and was introduced by Messrs. Veitch in the same year. It is very abundant on that part of the Cordillera called the Sierra de Chita, where it spreads in

uninterrupted masses for miles, covering a large area of the upland slopes, growing in the partial shade afforded by the low shrubs. Mr. Jensen, while collecting the then newly discovered Odontoglossum Hunnewellianum, found large quantities of Masdevallia Harryana on the ground beneath the branches of the trees on which the Odontoglossums were growing. He carefully selected the finest varieties and sent them to England. Only five plants arrived in live condition, but these were sold at a price that more than covered the cost of collecting. They were found at a village called La Capilla. Masdevallias are notoriously bad travellers, on account of their frail nature. The most reliable method of exporting Masdevallias appears to consist in first establishing the plants in small baskets filled with peaty soil, these being subsequently packed in large boxes.

NOVEMBER.—The traditional heavy and dull November day has the effect of driving the lover of beautiful flowers to the glass houses for the greater part of his leisure hours; for there his autumn and winter-blooming Orchids have then an alluring and special charm, their lovely colours seeming doubly brilliant, standing out as they do in strong contrast to the chilly and dreary conditions outside. With delight his Orchid houses are entered, the admiration of each individual pet becoming stronger and stronger on each occasion.—*H. A. Burberry.*

THE ORCHID CLUB.

THE first meeting of The Orchid Club in the 1924-5 session was held in Manchester, on October 10th. It was well attended by members and friends, the occasion being marked by an excellent display of well-grown plants, including many choice varieties. Two new members were elected.

PREMIER DIPLOMA.

Cypripedium Viking, from Dr. Craven Moore, a fine example of this well-known Westonbirt hybrid. Described and figured in the *Orchid Review*, August, 1923, p. 239.

DIPLOMA OF MERIT.

Odontoglossum crispum var. Mollah, from Mrs. Fred Hardy. A very fine white form, four inches in diameter, roundly shaped, the segments well overlapped, the sepals having a faint rose blush, the lip marked with two or three brown spots. The plant carried a full spike of ten flowers.

CULTURAL COMMENDATION.

Cypripedium Charlesworthii, Cloudeslee var., from F. T. Paul, Esq., F.R.C.S. The plant was in a four-inch pot and carried five large and perfectly formed flowers.

Groups.

Mrs. Fred. Hardy exhibited a few choice Odontoglossums, including a fine variety of O. Princess Yolanda, and some superb white varieties of O. crispum.

Dr. Craven Moore, Manchester (gr. Mr. C. Branch), showed a large group of choice Cypripediums, including Viking, Bianca, Maudiæ, and Sibyl superbum, as well as some fine forms of Cattleya Adula.

A. T. Cussons, Esq., Kersall (gr. Mr. F. Cookson), staged an interesting group, including a beautiful pan of Pleione lagenaria, Oncidium ornithorhynchum and O. Forbesii. Among the Cypripediums was a specially fine form of Maudiæ.

B. J. Beckton, Esq. (gr. Mr. W. A. Stewart), exhibited a miscellaneous group which attracted much attention. It contained fine examples of Oncidium hæmatochilum, the pretty Cirrhopetalum miniatum, Vanda Kimballiana, Angræcum Kirkii and Pleurothallis astrophora. A few choice Cypripediums were also included.

MANCHESTER ORCHID SOCIETY.

September 5th, 1924.

MEMBERS of the Orchid Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. Evans, G. Giles, J. Howes, E. W. Thompson, Capt. W. Horridge, A. Keeling, J. McCartney, F. K. Sander and H. Arthur (Secretary).

First-class Certificates.

Odontoglossum crispum var. Viola, from S. Gratrix, Esq. One of the finest forms, flower over four inches across, white, with heavy blotching of rosy-lilac colour.

Odontioda Zenobia var Edgemoor, from A. Hanmer, Esq., flower of excellent shape and of bright reddish crimson.

Odontoglossum Aphrodite var. Haddon House, from P. Smith, Esq. An exceptionally fine flower, beautifully marked with rich claret and shaded with rosy-lilac.

Awards of Merit.

Odontoglossum crispum var. Duke of Lancaster; Oncidioda Cooksoniæ magnifica; and Cattleya Dupreana magnifica; from S. Gratrix, Esq.

Cattleya Venus var Enchantress; from A. Hanmer, Esq.

Award of Appreciation.

Odontioda Brewii var. Viking, from S. Gratrix, Esq.

Cultural Certificates.

Mr. J. Howes, for Cattleya Thebes var. Queen Mary, and Odm. Duke of Lancaster.

GROUPS.

S. Gratrix, Esq., West Point (gr. Mr. J. Howes), was awarded a Silver-gilt Medal for an excellent exhibit of various hybrids.

A. Hanmer, Esq., Buxton (gr. Mr. G. Giles), showed fine forms of Cattleya Venus, C. Hardyana alba, as well as Cypripediums.

Messrs. Keeling & Sons exhibited Cypripedium Daisy Barclay, C. Lord Ossulston var. St. Mary, C. Dreadnought, and Odm. promerens.

Mr. J. Evans, Colwyn Bay, staged Cypripedium Wiertzianum (Lawrenceanum × Rothschildianum).

September 19th, 1924.

Members of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, J. Cypher, J. Evans, J. Howes, A. Keeling, J. McCartney, D. Losh-Thorpe, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cattleya Princess Ileana (Lueddemanniana × Myra Peeters); from S. Gratrix, Esq. A fine form with pure-white sepals and petals, the throat lemon-yellow.

Odontoglossum crispum var. Margaret Smith; from P. Smith, Esq. A very fine white flower of excellent formation, the flatly displayed labellum bearing a deep chocolate blotch.

Brassolæliocattleya Thyone var. Excelsior; from Mr. J. Evans. Flower well set, of bright orange-yellow colour, the labellum tinged with rose on the apex, the throat deep orange.

AWARDS OF MERIT.

Odontoglossum Krameri; from J. McCartney, Esq.

Odontoglossum Col. Leith var. punctatissimum (Rossii × Uro-Skinneri), and Cypripedium Enchantress; from Messrs. Keeling & Sons.

CULTURAL CERTIFICATES.

Mr. J. Howes, for Læliocattleya Soulange vars. Monarch and Gratrix's; Cattleya Venus var. Grand Monarch; Brassocattleya British Queen; and Odontoglossum Henry VIII.

Mr. C. F. Potts, for Odontoglossum grande.

GROUPS.

S. Gratrix, Esq., was awarded a Gold Medal for a splendid show of Cattleyas and various hybrids.

Messrs. Cypher & Sons, Cheltenham, exhibited an excellent group of Cypripediums, for which they received a large Silver Medal.

Mr. J. Evans, Colwyn Bay, staged Odontoglossum Gorizia and Cypripediums.

Mr. D. McLeod exhibited Cattleya seedlings and Cypripedium Germaine Opoix.

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To face p. 352.

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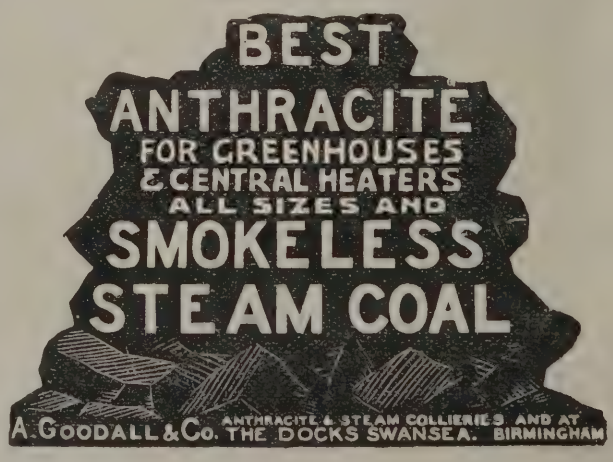

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THE ORCHID REVIEW.

VOL. XXXII.] DECEMBER, 1924. [No. 378.

NOTES.

SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.—At the Autumn Exhibition of this Society Orchids were well shown. The Julien Potin Cup for the finest variety was awarded to M. Marcoz, who staged Cattleya Mme. Bokanowski, of large dimensions and pinkish colour. Certificates of Merit were given to Brassocattleya Roland and Cattleya Sahara, both shown by MM. Maron et Fils; Brassocattleya Nerto, exhibited by M. Perrin; Læliocattleya Barres and Oncidium Boissyanum, both staged by MM. Vacherot et Lecoufle; and Cattleya labiata × amabilis, staged by M. Le Blevenec.

ORCHIDS AT KNIGHTSBRIDGE.—In the early part of November, Messrs. Sanders arranged a display of choice Orchids in the floral hall of Messrs. Harrod's Stores, Knightsbridge, London. A prominent position was given to the new Brassocattleya Sir Woodman Burbidge (Bc. Cliftonii × C. Warscewiczii), with flowers of soft mauve-pink colour, the expansive labellum darker, and with a lemon tinge on each side of the throat. Other noteworthy plants include Brassocattleya Pallas var. Grand Mogul, Odontoglossum Goldcrest, white, with lemon-yellow markings; O. Harold, pinkish; and O. Tagus, with distinct spotting. Cypripedium J. Thrower and C. Victoria were also included.

SOME HISTORIC ORCHIDS.—*Gardening Illustrated* contains in its issue of November 15th an interesting article by Mr. E. R. Ashton on "Some Historic Orchids." Reference is made to the celebrated Odontoglossum crispum Pittianum, to O. crispum apiatum and to O. crispum F. K. Sander, for each of which immense sums were paid. Odontoglossum Armstrongii also comes in for well deserved praise, and is the subject of an illustration. There are also articles on "Vanda cœrulea and Orchids for Winter Flowering," while Mr. Herbert Cowley contributes "A Chat about Orchids." Illustrations of Brassolæliocattleya Alfred Mollet var. Vivid

and Læliocattleya Lustrissima Westonbirt variety form two excellent examples of recently produced hybrids that have received R.H.S. Certificates; another interesting plant figured is Odontonia Philosopher.

MAJOR BARTLE GRANT.—We much regret to record the death of Major Bartle Grant, of Grosvenor House, Twickenham. When in India, Major Grant was a keen observer of the various Orchids in that country, and his studies led him to compile "The Orchids of Burma," 1895, published at Rangoon, and comprising a considerable amount of valuable information in its 424 pages.

MASDEVALLIA SPLENDIDA.—When describing M. splendida, Prof. Reichenbach broached the hypothesis that it might be a natural hybrid between Veitchiana and Barlæana, and when about a year later a flower of another plant from the same importation was submitted to him for identification, he called it M. Parlatoreana, suggesting that it might also be a natural hybrid between Veitchiana and Barlæana. Both splendida and Parlatoreana were gathered on the eastern Cordillera of Peru, near Cuzco, by W. Davis, who sent them to Messrs Veitch in a consignment of Veitchiana and Barlæana, with which they were mixed. Reichenbach's hypothesis was subsequently confirmed by Seden, who obtained an artificially raised hybrid by crossing Veitchiana with Barlæana, and which agreed well with the characters of the imported hybrid, thus confirming its exact parentage. Messrs. Veitch state that in the production of the garden-raised plant, selected varieties of both parents were used, hence the flowers of the resulting hybrid are somewhat more brilliant in respect to their coloration.

VALUE OF ORCHID SPECIES.—James Anderson, whose name is commemorated in Odontoglossum Andersonianum, contributed the following remarks to *The Garden*, November 27th, 1880: "The commoner forms of Orchids are now within the means of the less wealthy classes. Personally, I am glad to see they are so much popularised. I think that these numerous importations and sales are adding to the importance of this much-beloved family of plants, and I find the longer the generality of holders of the family go on, the more they become attached to them, and their desire for the better forms of the species increases. Moreover, I am only speaking what everyone who knows the history of Orchids can substantiate—that notwithstanding the enormous numbers of them now in the country, good Orchids of first-rate forms of species command as high a figure as ever they did in their scarcest days, and if I might assume the character of a prophet I have no doubt they will do so in time coming."

SOME MISUNDERSTOOD, BUT OTHERWISE WELL-KNOWN ORCHIDS.

By Dr. R. SCHLECHTER.

I. NEOMOOREA WALLISII (RCHB., F.) SCHLTR., N. COMB.

IN the *Gardeners Chronicle*, 1890, ii, p. 7, R. A. Rolfe described a new genus of Orchid under the name Moorea, with the specific name M. irrorata, in honour of Sir Frederick Moore, then Curator of the Botanic Garden, Glasnevin, Dublin. Subsequently, it was found out that the name Moorea was preoccupied, having been applied to the Pampas Grass as long ago as 1855. Rolfe therefore renamed his plant, replacing Moorea by Neomoorea. Since then this beautiful Orchid has always been known as Neomoorea irrorata, Rolfe.

The species has always been rare in cultivation. Although at the time of its appearance in the Glasnevin Gardens its exact origin or habitat was unknown, we now know that it comes from Antioquia and Santander in Colombia. In 1913 and the following year I received splendid inflorescences of this rarity from Herrenhausen, near Hanover, and these each carried over twenty flowers.

Until lately I always considered it a species that was not identical with any previously described Orchid, but on having an opportunity of examining some genera in the Herbarium of the late Prof. H. G. Reichenbach, I was surprised to find out that Neomoorea irrorata, Rolfe, is doubtless identical with the plant described in 1877 by Reichenbach as Lueddemannia Wallisii, Rchb., fil. (*Linnea* XLI, p. 109). The great Orchidologist described his plant from materials which he received through Gustav Wallis from New Grenada.

There is no doubt that Rolfe was right in his conclusion that the plant represented a new genus, and one much more closely allied to Houlletia than to Lueddemannia. According to the rules of nomenclature, the specific name first given should remain, and on that account Neomoorea irrorata, Rolfe, has to be changed to Neomoorea Wallisii, Schltr. (Lueddemannia Wallisii, Rchb., f.)

II. COCHLIODA DENSIFLORA, LDL.

Many years ago, in February, 1853, Lindley published in his *Folia Orchidacea* the genus Cochlioda, the only species being C. densiflora, Ldl. He received the materials of this plant from Matthews, who had collected them in Peru, most probably in the neighbourhood of Chachapoyas. The history of the plant has never been fully cleared up, so that when publishing my "Revision of the Genus" (*Orchis*, 1918-19) I had to leave open the question of its proper position. As no authentic material was then accessible, I had to content myself with the original and fairly clear

description that Lindley had given. I found therein a great resemblance with the characters of C. Noezliana, Rolfe, which was well-known to be widely distributed in Peru and even to enter North Bolivia. I had written to Vienna to ascertain if a tracing of Lindley's type could be found, but nothing was then discovered.

Some time ago, I discovered in the Herbarium of Reichenbach, fil., in Vienna, not only this much-sought-for tracing of Lindley's type, but also duplicate material of Matthews' collecting that had evidently been dedicated to Reichenbach by Lindley himself. This material shows quite plainly that C. Noezliana, Rolfe, is exactly identical with Lindley's C. densiflora. As Lindley's name was given to the type plant of the genus, and was published as early as 1853, C. Noezliana, Rolfe, published in 1891, must now be regarded as a synonym of C. densiflora, Ldl.

It is a great pity that this alteration has to be made in the name of a plant that is now so very important in the evolution of hybridisation, but we cannot avoid it from whichever point of view we regard the laws of nomenclature.

III. ODONTOGLOSSUM MAJALE, RCHB., f.

One of the many species of Orchid whose history needed to be cleared up after Reichenbach's death was the disputed Odontoglossum majale, Rchb., f., from Central America. From the description alone it was almost impossible to identify the plant, since Reichenbach, fil., found it only too convenient to give inadequate descriptions, even without any hints as to the size of the flower and its details. I often found out from his original herbarium labels that he frequently knew perfectly well the origin of certain species which he described only with general remarks about their habitat, as, for example, "Central America," "Andes," "Brazil," etc. The same thing happened with Odontoglossum majale, Rchb., f. He had good material of the plant from Guatemala, collected there by Bernoulli and Cario, in May, 1866, under their No. 506, and he published the description of the plant in 1886 (*Flora*, LXIX, p. 550).

When comparing the type specimen of the plant and the clear drawings and analyses made by Reichenbach himself, I saw at once that I had before me the same plant that was described six years later by Rolfe as Odontoglossum platychilum (*Gard. Chron.*, 1892, ii., p. 35). Since Reichenbach's name has priority, the now fairly well-known O. platychilum, Rolfe, must in future bear the Reichenbachian name O. majale, Rchb., f.

NEW HYBRIDS.—Messrs. J. & A. McBean have recently flowered Odontoglossum *Zeta* (Jasper × mirum) and Cattleya Queenie (Hesta × aurea). Mr. J. P. Mossman, Hackensack, N.J., U.S.A., has flowered a novelty in Læliocattleya Navajo (Lc. callistoglossa × C. Ballantineana).

SPIRANTHES ROMANZOFFIANA.

By COLONEL M. J. GODFERY, F.L.S.

ALL botanists will welcome Mr. Mousley's intensive study of the above species (*Orchid Review*, 1924, pp. 71 and 296) with its excellent photographs. The evidence of a keen Canadian observer with abundant material at his disposal is invaluable. His exhaustive examination of the root system is especially helpful, as, owing to the extreme rarity of the plant in Ireland, similar research might easily end in its extinction. It is to be hoped that no misguided enthusiast will make the attempt.

Mr. Mousley criticises my paper in two minor points, but confirms its main contentions, *i.e.*—that the Irish plant is identical with the American, that it is not viviparous, and that the appearance of the new tubers is not delayed till the following spring. The sentence on page 71 beginning, "That a single tuber only is formed," is not, as the inverted commas would seem to imply, a quotation from my paper, in which it was clearly stated that North Irish specimens in the Kew herbarium have three to five tubers.

Mr. Mousley's photographs show that in the Canadian plant the incipient tubers appear at the same time as the bud, and enable us to visualize what Drummond meant by his oblong knobs. My statement that the tuber precedes the bud was founded on Mr. St. Quintin's photograph (*Orchid Review*, xxx, 262, fig. 1) in which the new tuber has attained its full size whilst the bud is still in its infancy. I also had in mind S. autumnalis, which normally has two tubers only, of which the one in flower has already lost its foliage, and the new one developed its rosette of leaves. In view of Mr. Mousley's paper it would have been better to compare S. Romanzoffiana not with Orchis, but with Epipactis, in which two roots or incipient tubers appear at the base of the bud, and more or less simultaneously with it, and this comparison would have been more natural, as both Spiranthes and Epipactis belong to Neottiæ. In Orchis we find two well-developed tubers strongly differentiated from the slender though fleshy roots, the plants being unable to flower on roots alone, but have first to build up in the form of a new tuber the material for next year's flowering spike. In Epipactis there is no differentiated tuber, but all the roots (often very numerous) are tuberised to a moderate degree, and the plant is able to flower without having first to accumulate material in a specialised tubercle. The bud forms at the foot of the stem, and at the same time two roots appear, one on each side of its base, except in E. leptochila, Godf., which has only one such root. The root system in S. æstavilis, S. cernua, and S. Romanzoffiana appears to resemble that of Epipactis latifolia, except that the roots are rather more tuberised and much fewer in number. In S. autumnalis, however, they are normally

restricted to two, which are much thicker, and approximate more nearly to the tubers of Orchis.

It appears that in Canada the new shoot opens its leaves, and does not go through the winter as a hard green bud. Mr. St. Quintin tells me that, so far as his experience goes with five plants from North Ireland, S. Romanzoffiana pushes up its new shoot before the flower-spike is withered, but the bud, though it slowly elongates, does not unfold its leaves till the following spring, and is dark-green from the time it first pierces the soil. It is not a very important point, and is probably merely due to different climatic conditions.

The Canadian plant seems to develop more roots than the Irish one, sometimes having as many as twelve, about half of which are survivals from the previous year, in process of decay. As to the two root systems at different levels in fig. 6, p. 77, I have occasionally seen the pair of new roots in Epipactis spring from a point higher up on the stem, and on one occasion found Orchis elodes with the new tuber some distance above the old one.

Mr. Mousley brings out the interesting point that wet places are conducive to long slender tubers, and drier loamy soil to much thicker ones, the latter being also correlated with broader leaves; he suggests that the broader leaves of the South Irish plant may be due to a similar cause. Dry ground appears to induce greater tuberisation, creating larger reservoirs to draw upon in case of drought, of which S. autumnalis is another example. In wet places there is no need to store up water. The horizontal growth of the tubers in such situations is probably due not only to the soft nature of the soil, but also to the presence of water near the surface; in dry ground they turn downwards in quest of the moisture they fail to find higher up.

MR. J. M. BLACK.—Mr. J. M. Black has returned to England after spending the whole of the month of October in the United States of America. He was particularly impressed with the wonderful autumn weather, and says that America is essentially a Cattleya country, this genus and its allies being generally well cultivated. We hope to publish some descriptive notes from him in later issues.

CATTLEYA JOAN.—A pleasing novelty has flowered in the collection of C. J. Lucas, Esq., Warnham Court, Horsham. It is the result of crossing Cattleya Fabia with C. Lambeauii, and bears large flowers, the sepals and petals pure-white, the labellum prettily tinged with bright rose on the front and side lobes, the throat veined with a yellowish tint.

THE NON-SYMBIOTIC GERMINATION OF ORCHID SEEDS.

By EDWARD CLEMENT.

WITH further reference to my paper, which appeared in the *Orchid Review*, August, 1924, p. 233, giving a preliminary report of experiments on the Non-Symbiotic Germination of Orchid Seeds, it may be mentioned that in March last the above paper was read at the British Mycological Society's meeting, and on May 1st a résumé of the paper was given at the Linnean Society, London. On both occasions seedlings of Odontoglossums, Dendrobiums, Cymbidiums, and Cattleyas were exhibited in tubes and in pots, in the latter as growing on moss and fibrous compost.

It will be recalled that the paper dealt primarily with the Odontoglossum genus, which had received the greatest attention, the majority of the experiments having been made in this direction. Other genera were experimented with, more or less in quest of possibilities as to a general application of the aseptic process to seeds of the Orchidaceæ.

Seeing that some months have elapsed since the previous paper was written (January, 1924), it may be of interest to give some further particulars as to progress, and to relate a few points of importance associated with the aseptic culture of Odontoglossum, and other Orchid seed. Some idea of the progress made by the earlier Odontoglossum seedlings may be obtained from the accompanying photograph. The three pots illustrated represent a pot each of three respective batches of Odontoglossum seedlings at different ages. No. 1, 19 months; No. 2, 14 months; No. 3, 11 months—from the date of sowing. The compost, it will be noticed, is considerably below the rim, therefore, this fact must be allowed for when measuring the height of the plants. There are some 1,200 of these seedlings, all of which were transferred direct from tubes on to compost.

In the earlier report mention was made of the care necessary in compounding a medium for seeds of the Odontoglossum genus, and while an apparently correct composition was successful for the germination of one genus it was unsuited to another. The hope was expressed that, by experiment, a modification or compromise might result, equally suitable to differing genera. To a great extent this desire has been achieved, and to-day a large number of seedlings, consisting of six distinct varieties of Odontoglossum hybrids, are in a healthy and advanced stage of germination; moreover, on this modified medium progress has been more rapid.

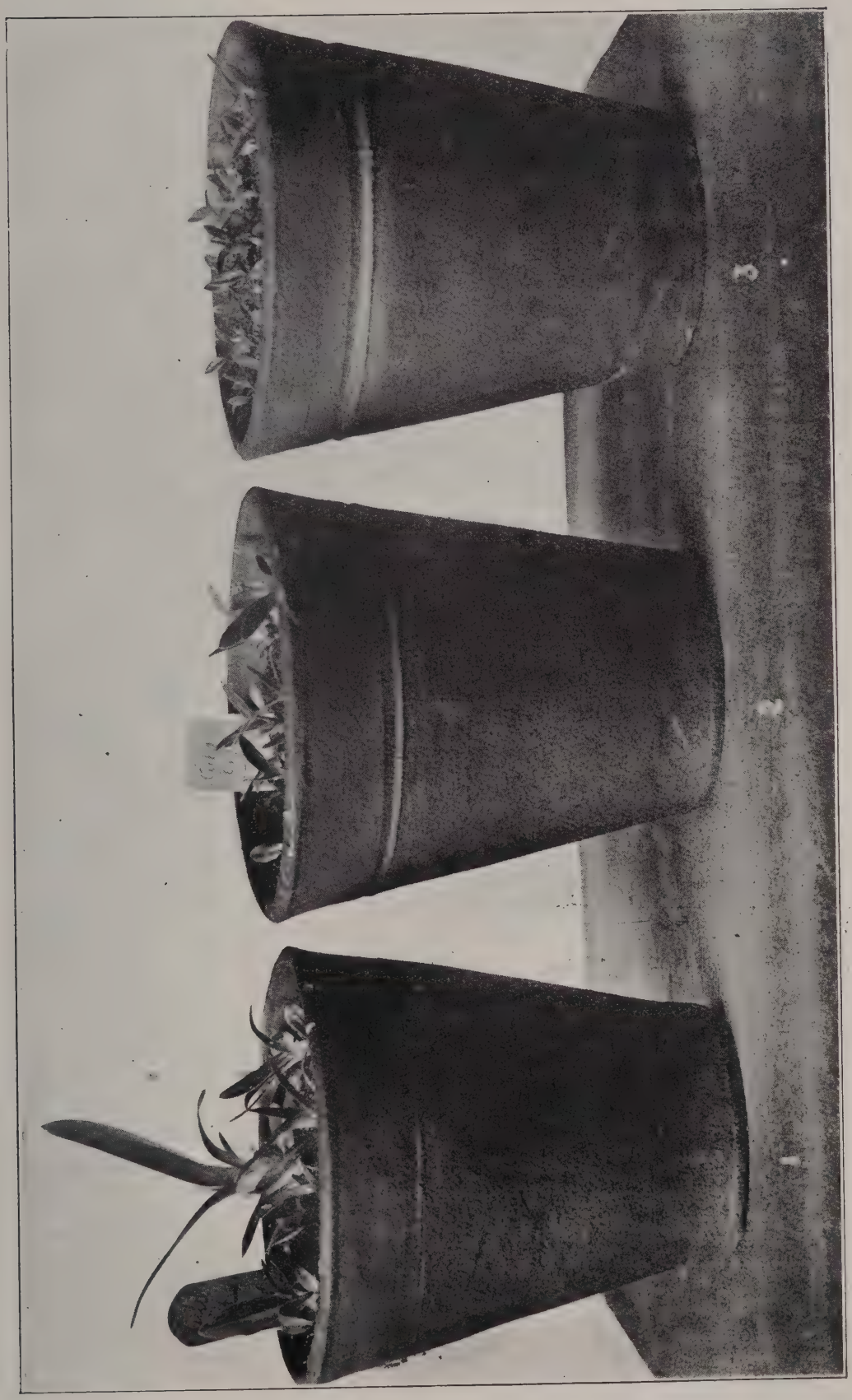
As previously pointed out, the Hydrogen-Ion concentration of medium is important, and tests made go to show that from seeds of the above genus the PH value most suitable needs to range between 6.5 and 6.8, other factors in the composition being satisfactory. It is possible that the

solubility of food materials contained in the substratum is influenced by the PH value, notably phosphates; also, to some extent, processes of conversion may be affected.

With regard to the sugars employed. It is curious that while in Nature sucrose is probably one of the first synthetical products formed in plant metabolism (leaving out the question of formaldehyde), yet, in my hands, sucrose added as such to the medium has not proved very successful, and in consequence is rarely used except for experimental or control tests. Neither asparagine or salep are of any service; indeed, the presence of the latter has a distinctly detrimental effect.

That Orchid seed requires an outside source of organic supply appears conclusive, and, although unusual, is not surprising when one considers the meagre food reserve of this particular seed. The small, oily food content is probably converted, chiefly into sugar, in the early stages of germination, and becomes more or less used up long before the somewhat prolonged process of germination is completed. It is here, in the early stage, that under *natural* conditions of germination the fungus doubtless plays a part by providing, directly or indirectly, the necessary material for the maintenance of constructive metabolism of the young corm. It does not appear clear to my mind that satisfactory progress of the seedling can continue indefinitely in the *total* absence of organic matter. It may be possible for growth to proceed awhile, particularly with seedlings that have been artificially germinated and which at the time of transfer are already gorged with starch (a condition that should really not obtain), but, even so, this presumably could not sustain life normally for a prolonged and indefinite period. Furthermore, it does not appear probable that the available carbon dioxide and water alone are sufficient for the continuance of healthy and robust growth. In instances where Cattleya seedlings in an advanced stage of germination have been transferred to a medium of Pfeffer's solution, plus agar, is it not conceivable that by reason of the presence of the agar, which being a carbohydrate substance containing a mono-saccharose, *e.g.*, galactose, that some slight organic matter may become available to the seedlings after they have developed true roots? That the above medium is of no service for the complete germination of seed has been proved by my past experiments. It is possible that more conclusive evidence of continuation of plant growth without available organic matter might be arrived at by the use of some such medium as Winogradsky's silica jelly.

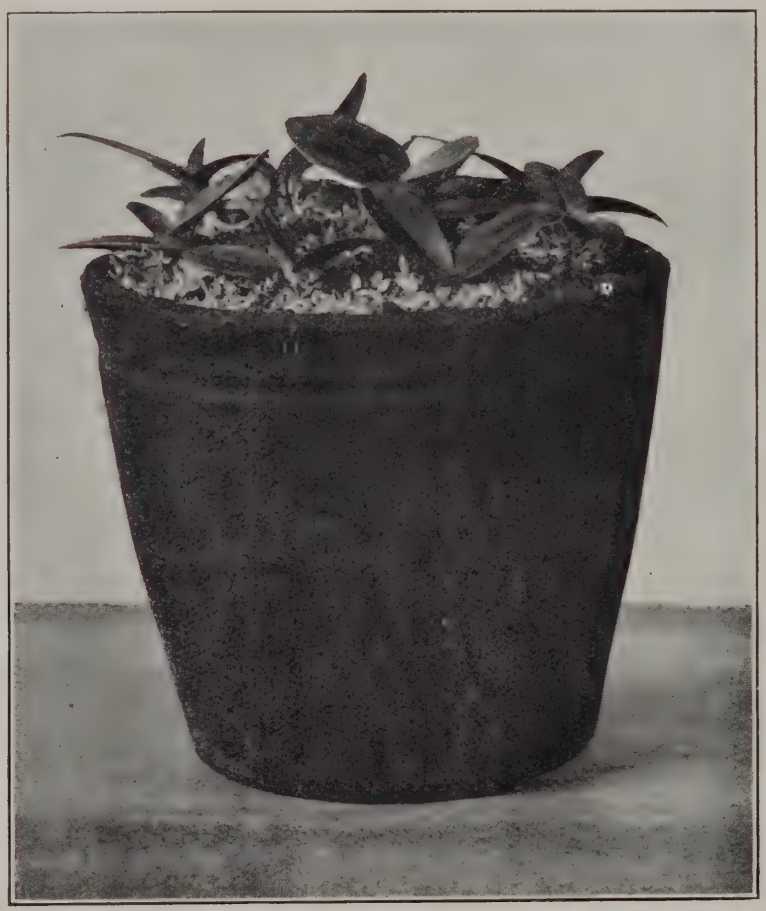
In culturing seedlings on medium, it is important that the latter should be of the desired consistency, *i.e.* fairly firm but not too solid or dry, and capable of remaining moist for at least five to seven months, after which, most species of seedlings will be sufficiently advanced for transfer to pots, when, if the compost is of a suitable nature, growth will proceed with little



ODONTOGLOSSUM SEEDLINGS, TWO-THIRDS NATURAL SIZE.

No. 1, age 19 months. No. 2, 14 months. No. 3, 11 months.

or no delay. Regarding the transfer of seedlings, I have found the direct method from medium to compost preferable, as under these conditions their natural habit of growth is resumed early in life, and probably zymotic functions are better served. Results of the above procedure concerning Odontoglossums are herewith illustrated. Some hundreds of Cattleyas similarly treated are remarkable for their vigorous and sturdy growth.



CATTLEYA SEEDLINGS 2/3 NATURAL SIZE. SOWN NOV. 10, 1923. PHOTOGRAPHED NOV. 5, 1924.

Every effort should be made to provide the young seedlings with favourable nutriment and environment, yet they should not be subject to any treatment that savours of forcing.

During the past year, rather more attention has been given to the germination of Cattleya seed, and, here again, a slight modification of the medium has been made, with the result that, to date, some thousands of healthy seedlings are making vigorous progress, and at from five to six weeks from sowing many of the protocorms had leaf-points showing and root-hairs developing.

It is interesting to note that the above medium has proved quite suitable for the germination of the British Orchis, some seeds of Orchis morio and O. maculata have both been successfully germinated by its aid.

Sterilisation of seeds needs to be effectually carrried out, and I have found nothing to supersede a solution of hypochlorite of calcium.

That all seed to be sown on aseptic medium should be previously sterilised is made clear by the following experiments. Three freshly cut and perfectly healthy pods of Odontoglossum seeds were obtained with a view to ascertain (1) at what age the seed matures; (2) if the contained seed was free from contamination. Pod No. 1, was nine months old from the date of pollination; pod No. 2, ten months; pod No. 3, eleven months. The three pods were examined under a lens for any sign of a crack or abrasion, but no defect of any kind could be detected. Each pod was subsequently immersed in a solution of $CaCl_2O_2$ for three minutes, dried, and passed quickly in an out of a Bunsen flame. An incision was then made with a sterilised knife, the seeds extracted by means of a sterilised platinum loop and transferred direct to a septic medium in tubes. Three tubes were allocated for the seeds from each respective pod, and technical care to avoid contamination was observed throughout. In all nine tubes moulds appeared in the course of a few days. A further nine tubes of similar medium were taken, three for each pod, as before. More seed was extracted, but sterilised before sowing, and in these latter nine tubes no trace of contamination appeared. This result suggests that spores invade the seed capsule, possibly by way of the stigma, and remain dormant pending suitable conditions for development. As regards viability of seed contained in the above three pods, germination was as follows:—Pod No. 1, about 7 per cent.; pod No. 2, about 35 per cent.; pod No. 3, about 90 per cent.

Orchid seed when cultured aseptically may be sown at any time of the year, but preferably as soon as possible after the ripened pod opens. Although Odontoglossum seed will germinate in from three to four months after it has been collected, Cattleya seed may germinate up to as late as eight or nine months after the opening of the pod.

The viability of Orchid seed is greatly influenced by its generic status, also by the methods adopted for storing.

At this point reference may be made to the subject of tubes versus flasks for seed germination. In my experience, the latter offer no advantage whatever over the former. Indeed, seedlings germinated in tubes of about 18 cm. × 2 or 3 cm. have proved perfectly satisfactory. Furthermore, tubes are easier to manipulate and occupy less space in the incubator or greenhouse.

It appears that the supply of air necessary for the process of germination is not great, and the following tests strengthen this suggestion. A batch of twelve freshly sown tubes was selected. Six of these were tightly plugged, capped with tin-foil, and bound round with fine wire. The remaining six were loosely plugged. Of these latter, Nos. 1, 2 and 3 had the cotton

stopper removed for a minute or two, once a fortnight, and into Nos. 4, 5 and 6, carbon dioxide, diluted with air, was introduced once a month. At the end of five months no difference in growth or colour of the young seedlings was noticeable in any of the twelve tubes employed.

This result suggests that, in the process of germination under aseptic conditions, the necessary material for development is derived chiefly from the food contained in the substratum, and that the air supply is of less importance. In the absence, however, of this fundamental organic matter, and before leaves are produced, the process of photo-synthesis is more or less suspended and unable to compensate or make good the deficiency, in spite of the presence of chlorophyll ; indeed, the latter apparently becomes more or less inactive, and under these conditions the presence of CO_2 and water are of little service.

It is no doubt essential that for the favourable progress of germination the food matter contained in the culture medium is of vital importance, and needs to be of a readily diffusable nature, suitable to the selective requirements of the seedling, and of direct utility. This being so, the function of photo-synthesis proceeds, and may be assisted by a judicious supply of light.

The germination of Orchid seed, with its peculiar and inherent properties, undoubtedly places it in a sphere apart from the more usual and accepted processes governing germination generally. Experiments are being conducted with a view to ascertain how far germination will proceed in the presence of organic matter, and the *absence* of a continual supply of fresh air. For this purpose, narrow culture tubes with small air capacity were thoroughly sealed immediately after the seeds were sown. Results are awaited, but not without some trepidation.

A word or two relative to the presence of bacteria found in the roots of Orchids growing naturally in fibre compost may be of interest. During the examination of some hundreds of sections cut from Odontoglossum roots, it was noticed that bacteria were invariably present in the cells, particularly in the more healthy and fleshy roots. A careful microscopical examination revealed minute organisms somewhat analogous to the bacteroids. On inoculation into suitable culture medium, the organism produced a white, creamy growth, and was found to be actively motile. (See illustration, p. 365). Moreover, in the many cultures made, the morphological characters were identical.

Now what are the functions, if any, of this organism ? It is certain that its presence in the roots is not harmful. On the other hand, do these bacteria assist in the contribution of nitrogen, or are they digested within the cells, to the benefit of the plant ? Perhaps neither. However, the matter is being further investigated, and experiments conducted in

connection with rooted seedlings, after transfer to pots. That the organism, in conjunction with nutrient medium, is of no service in the germination of Orchid seed has been proved.

To summarise :—

1. It is now conclusively proved that seeds of the Odontoglossum and other genera can be successfully germinated without fungal aid, and normal growth continued after transfer to pots.

2. Seed to be germinated by the aseptic process needs to be thoroughly sterilised previous to sowing.

3. The medium employed must be of a suitable consistency, just moist

BACTERIA FROM ODONTOGLOSSUM ROOT, STAINED TO SHOW FLAGELLÆ, *i.e.*, ORGANS OF LOCOMOTION, × 650

enough to create a gentle and continual supply of moisture throughout the period of growth, and contain food in a condition that renders it readily diffusable and of direct utility to the germinating seed. A sign of healthy progress is the early disappearance or absorption of the integument.

4. Light, temperature, and general environmental conditions are important.

5. By the aseptic process, seed may be sown at any period of the year.

6. To obtain healthy and sturdy plants, moderate conditions of treatment are essential.

7. Experiments are being continued, and it is hoped, as seed becomes available, to test the adaptability of the process to most of the better known genera of Orchids.

ORCHIDS AT "CHARDWAR," BOURTON-ON-THE-WATER, GLOUCESTER.

HALF a century's connection with Orchids is certainly worthy of being recorded. This long period stands to the credit of George F. Moore, Esq., who maintains at "Chardwar," Bourton-on-the-water, Glos., a collection which comprises not only a wide range of genera, but many of the finest Cyripedium hybrids. Mr. Moore was first attracted to the beauties of Orchids in 1874, when residing in India. He then cultivated in his garden various representatives of the genera Saccolabium, Aërides, Vandas, Phaius and Cymbidium. Especially fine was Arundina bambusifolia, a terrestrial species of Northern India, and which produced masses of flower. Other plants that grew well under the favourable atmospheric conditions were Vanda cœrulea and V. teres.

On returning to England in 1888, Mr. G. F. Moore commenced the formation of a collection that soon made itself famous throughout the horticultural world. At the present time eleven houses of the span-roofed type are entirely filled with Orchids. Dendrobiums have been cultivated in an extensive manner. Probably no other amateur has given greater attention to D. Phalænopsis, and many of our readers well remember the splendid groups of these plants that were on different occasions exhibited in the Royal Horticultural Society's Hall, Westminster. One of the noteworthy varieties was D. Phalænopsis var. Louisa Deane, a charming blush white form, with a spike of 17 flowers, and to which an Award of Merit was given on October 24th, 1905. In the autumn of the following year this plant received a First Diploma, the occasion being a special competition for varieties of D. Phalænopsis.

Dendrobiums of the nobile section comprise over 500 selected varieties, nearly all of which are resting in a cool house during the present month. A popular hybrid is grown in D. Thwaitesiæ, Veitch's variety, the golden-yellow flowers of which make an elegant display early in the year. The method here practised with regard to the cultivation of D. aureum is to maintain a healthy batch of plants by frequent propagation. The young plants thus obtained quickly reach maturity. More than a couple of dozen strong plants have thus been produced, the bulbs being much stouter than generally seen. D. Brymerianum also succeeds admirably under similar treatment, but D. Wardianum does not respond well to this method. There is also a select lot of species, including several rarities, and fine plants of D. Farmeri.

Well deserved success came to the owner of this collection in connection with the genus Cypripedium. Every grower of these plants knows how difficult it is to produce a hybrid of F.C.C. quality. At the meeting of the

Royal Horticultural Society held November 27th, 1923, no less than four First-class Certificates were awarded to Cypripedium hybrids from Mr. Moore's collection, a record number for any exhibitor to obtain on the same day. At the following meeting, on December 11th, three more were obtained. On this latter date eighty specimen Cypripediums of high order were arranged in a group, when a Silver-gilt Lindley Medal was awarded. All of these plants had been raised in Mr. Moore's collection, and some of them represented hybrids of the fifth generation. They included such well-known plants as Cyp. Gwen Hannen, Chrysostom, and Prince Albert. Some of the finest results have been obtained by the use of Cyp. Christopher, and on that account one is not surprised at finding large batches of seedlings having this plant as one of the parents. Gold Medals and high awards have been bestowed upon these plants. No other medal is more appreciated than the Lawrence Medal, given annually by the Royal Horticultural Society for the finest exhibit during the year. In 1913 this medal was awarded to Mr. G. F. Moore, for his excellent exhibit of Cypripediums in the Society's Hall, January 7th. On that occasion more than 250 large specimen plants of the finest Cypripediums were arranged in a magnificent group.

Quite an interesting section is composed of various hybrids of Cyp. Fairrieanum. They include the Westonbirt variety of Niobe, still one of the best of its kind, and a batch of hybrids produced by crossing Argus with Fairrieanum, the flowers being borne on tall stems; also the well-known Germaine Opoix, the A. M. variety of Nydia, Madame A. Fevrier, and others. It is worthy of note that nine out of every ten Cypripediums in this collection have been raised at "Chardwar." One of the most successful crosses first flowered in 1919, when it was recorded as Cyp. Memoria F. M. Ogilvie (Curtisii × Pyramus). The whole batch of these seedlings has turned out remarkably well, but two varieties of outstanding merit must be mentioned in The Premier and The King, the last mentioned having received a First-class Certificate from the Royal Horticultural Society, and a Gold Medal from the Manchester Orchid Society.

Cypripedium Maudiæ was acquired as a single growth from the late Mr. Ogilvie's collection. It possesses a vigorous constitution, and the stock has been multiplied rapidly by repeated division of the plants. On one occasion as many as 700 flowers were open simultaneously, and a few are to be seen during every month of the year. A plant of Cypripedium Evadne (Charlesworthii × superbiens) is of interest as being one of the very few members of the genus in which the flower has a noticeable scent. Although yielding but a faint odour, this character has been transmitted to one of its seedlings. An old favourite that still meets with appreciation exists in Cypripedium Nandii (callosum × Tautzianum), obtained from Messrs. Low & Co. over

twenty years ago, and originally raised by Mr. R. I. Measures in 1894. One of the side stages is filled with a vigorous batch of Cypripedium niveum, bellatulum, concolor, Godefroyæ, and their hybrids, the latter predominating numerically. This section comprises over 300 plants, and one could not wish for a healthier lot. Their condition is in a large measure due to the use of calcareous loam as a potting medium. Foremost in this lot is Boltonii, too well known for description; Astarte, composed of niveum, bellatulum and insigne Sanderæ, and producing flowers somewhat larger than those of Boltonii; and Snowflake, made up by crossing concolor, bellatulum and niveum, the charming flowers being porcelain white, slightly spotted, and with a yellow staminode.

Cypripedium Lady Dillon is recorded as having been shown by Mr. W. R. Lee in 1913, but without any parentage. This particular hybrid was raised in the "Chardwar" collection, the parents being nitens and Mrs. Wm. Mostyn. It is therefore a synonym of Cypripedium G. F. Moore (nitens × Mrs. Wm. Mostyn), raised and recorded by Mr. Moore in 1904. Cypripedium bourtonense obtained an R.H.S. Award of Merit, December 16th, 1913. It was raised by Mr. Moore, and apart from the immense size of the flower, it has the peculiarity of producing a ventral sepal almost as large as the dorsal. Another noteworthy plant can be seen in Cypripedium Mrs. Eley (Christopher × Warrior), recorded in 1923, and yielding a large flower, the white dorsal sepal having a vertical streak of rose colour, the petals apple-green and with a median line of dark brown. With such a large collection as this, one expects to find numerous hybrids of C. insigne, and they are well represented. One of the most attractive is Cypripedium Pickaninny (insigne × Leeander), with richly spotted flowers, much darker than usually seen, and suggesting this specific name—a negro baby.

Lælia anceps is cultivated in a wide selection, both white and coloured forms. A very dark variety, distinguished as L. anceps var. Lady Colman, is worthy of special mention. Sobralias are also cultivated successfully, and standing amongst the batch of Cypripedium Maudiæ are four elegant specimens of Angræcum sesquipedale. Other plants of interest include various small-growing kinds, such as Leptotes bicolor, Platyclinis glumacea, Epidendrum polybulbon, Lælia Dayana and L. pumila. Oncidium cheirophorum is grown in many healthy plants. It flowers well and is easily propagated. Oncidium bicallosum with its erect spike of large flowers also proves an attraction, and makes a pleasing contrast to the mauve-coloured flowers of other genera.

Cymbidiums are now very popular, and in the "Chardwar" collection they are almost of equal importance with the Cypripediums. Some of the Cymbidiums are in Belgian leaf-soil, and look uncommonly robust, but

when taken out of this material and placed in loam they receive a check. Experience shows that any such change should be accomplished gradually, and on occasions when this is effected, a portion of the compost in the upper part of the pot is carefully removed and the new material inserted. Other Cymbidiums grow equally well in a loamy compost. The chief point being that these plants grow well in either kind, but do not like a sudden change from leaf-soil to loam, or vice versa. Cymbidium Ceres var. Empire received an Award of Merit at the last Chelsea Show, when it bore a spike of eight large flowers. It has since produced an immense bulb, and carries two flower spikes. This is but one example of the manner in which these plants respond to suitable conditions and careful management.

The various Cymbidiums occupy one of the largest houses in the "Chardwar" garden. There are three fine plants of the rare C. Alexanderi album, also grand plants of Castor aureum, Castor The King, and Castor var. G. F. Moore. Another popular Cymbidium exists in Ceres, and of this there are several elegant varieties, and still another in Garnet, obtained by crossing Lowianum with Parishii. It is always interesting to see the species from which these hybrids have been produced, and we are glad to note that Mr. G. F. Moore has several of the finest varieties of C. insigne, including album, St. Alban, Bieri and Sunset. Cymbidium Huttonii and C. Devonianum are generally very difficult subjects to manage, but no trouble is experienced with them in this collection, the former being healthy and vigorous, while the latter is far above the average condition. Phaio-cymbidium chardwarense was recorded in 1902 as a hybrid between Cymbidium giganteum and Phaius grandifolius, but there is not the slightest evidence of the former parent, either in the habit of the plant or in the formation of the flowers. Phaius Blumei is here grown in a bed on the floor level.

In other houses one can see fine plants of Stanhopea Tigrina, S. occulata, and large specimens of Maxillaria tenuifolia, M. luteo-alba and Chysis bractescens. The charming Chondrorhyncha Chestertonii is another favourite, while Cœlogyne Sanderiana and C. Mooreana are equally appreciated. Thunias occupy one of the side stages and make large bulbs, from which an abundance of flower is produced in due season. T. majorensis and T. Winniana are amongst the batch. There is also a nice collection of Lycaste Skinneri.

The present time is hardly the best for describing the Odontoglossums, so particulars must be brief. These plants are cultivated in a long house, and look the picture of good health. Among the plants that were in flower at the time of making these notes were O. crispum xanthotes, O. Pescatorei, with many-flowered spikes, and a few hybrids of the amabile type. On another occasion fuller details of the occupants of this house must be given

for there are over a dozen fine crispums of the Premier type, as well as some recently produced hybrids, including O. Felix, to which an Award of Merit was given at the last Chelsea Show. An Odontoglossum hybrid between ramosissimum and Edwardii has recently carried a many-flowered inflorescence. This plant was raised in the Burford collection and presented to Mr. Moore by the late Sir Trevor Lawrence. Although the individual flowers are small, their number and prettily crisped segments make a fine effect. Odontiodas are numerous, and include the beautiful Oda. Radiant, which secured a First-class Certificate at the Chelsea Show of 1923. Suspended from the roof of this house is a row of Sophronitis grandiflora, each plant bearing several of its scarlet-red flowers. Miltonias of the vexillaria section are another feature in this collection, and many handsomely blotched varieties may be seen flowering during the spring months.

In a warm house devoted to Cattleyas and allied genera, there are many meritorious plants. Amongst the older hybrids are several vigorous examples of the long-bulbed section which are generally difficult subjects to keep going for any prolonged period, such as Læliocattleya Charlesworthii and Lc. Myra. Cattleya Mossiæ is represented by many plants that have been over thirty years in cultivation. There are fine examples of C. Portia, of C. The Bride, with pure-white flowers, pleasing varieties of Brassocattleya Albion, obtained from the Warnham Court collection, and numerous others that need a separate article to adequately describe their special merits.

The production of Cypripedium hybrids is being carried on with much success. The method of seed sowing is as follows:—A single growth, or young plant, of Cypripedium is placed in a pot in the usual way, using a compost of fibrous loam. After a period of a few weeks to allow the new roots to penetrate the compost, the seed is sown on the surface, and quickly germinates. Sowing the seeds around large plants of several growths is not so successful, as the foliage creates too much shade.

It is gratifying to record the keen practical interest taken by Mr. G. F. Moore. His happiest times are spent in the various houses examining the plants and working-out improved methods of seed sowing and cultivation. During the last 22 years this important collection has been under the care of Mr. W. H. Page, who had previously been five years in the Royal Botanic Gardens, Kew, and ten years with Messrs. Low & Co.

The finest results are always obtained by the favourable combination of meritorious varieties and skilful cultivation. As evidence that this has been the case at "Chardwar," we may recall the wonderful exhibit from Mr. G. F. Moore's collection on November 15th, 1904. On that occasion the end of the R.H.S. Hall was filled with a selection of 400 specimen Orchids. A Large Gold Medal was awarded to Mr. G. F. Moore, and a Lindley Medal

to Mr. W. H. Page in recognition of the excellent culture seen in all the plants, and for the general arrangement of the group.

We have pleasure in adding that the present volume of the *Orchid Review* is cordially dedicated to George F. Moore, Esq., "An Enthusiastic and Highly Successful Amateur of Orchids."

R.H.S. AUTUMN ORCHID SHOW.

EVERY visitor was apparently fully satisfied with the Autumn Orchid Show arranged by the Royal Horticultural Society in October last. Considered from all points, it was a great success, although a few more amateurs' exhibits would have increased the attractions. The various groups covered a large area and comprised a wide selection of plants. It would be a matter of considerable interest to know the exact numbers of the different species and of the various hybrids that were staged. Such details would prove a valuable record in time to come.

Notwithstanding the vast array of hybrids, there are still many species that strongly hold their own as regards certain colours. Of these, Oncidium varicosum was extensively used for the background of Messrs. Sanders' group. The intense bright-yellow colour of this species has not yet been produced in any hybrid. In fact, it does not seem possible for finer quality to be produced, all we can hope for is a plant possessing better constitution. Vanda cœrulea was also in the same group, and stood out prominently on account of its beautiful flowers of light blue, a colour as yet unseen in any hybrid.

Present-day methods of cultivating Odontoglossums bring about far finer results than any seen by our forefathers. At this show they were remarkably fine, the more so when one remembers that, generally speaking, the autumn is not their natural flowering season. Messrs. McBean included in their group a robust plant of Odontoglossum Topaz, obtained by crossing regale (ardentissimum × Lawrenceanum) with Lambeauianum. The spike measured seven feet in length, bore two branches, each 20 inches in length, four branches each 17 inches in length, and a total of 84 flowers.

The first appearance of a new species does not often allow one to see it in its real beauty. A few years are required to get the plant up to its full vigour. Vanda luzonica is a case in point. Messrs. Armstrong & Brown showed an elegant specimen, clothed with foliage from the base to the top of the stem, and bearing three many-flowered spikes. The flowers have white sepals and petals, with a rose-purple spot at the extremity of each, and a rose-purple labellum. These characters suggest that it would make a suitable parent with V. cœrulea. Perhaps we shall see such a hybrid at some not far distant date.

Angræcum Eichlerianum was one of the interesting plants exhibited by Sir Jeremiah Colman, Bart. This species has erect stems, bearing numerous aerial roots, and large light-green and white flowers. It is a native of the West Coast of Africa, and was originally described in 1882. When albinism appears in Cattleya species, it is more often seen in the sepals and petals than in the labellum. There are many known varieties having white sepals and petals and a coloured labellum. But in Cattleya labiata leuchocheila, also included in this amateur's exhibit, the sepals and petals are rose-tinted, and the labellum almost white, quite a reversion of the variation generally witnessed.

It is unfortunate that the varietal word alba is used to denote both pure-white flowers and those having a coloured labellum. Its use should be restricted to flowers enrirely pure-white. Messrs. Cowan staged some elegant examples of Cattleya Hassallii alba, with expansive sepals and petals that are pure-white, and the large labellum bright-purple. This hybrid is largely composed of C. Warscewiczii var. F. M. Beyrodt, a particular variety that has proved itself one of the finest of parents. In nearly all hybrids resulting from its use, the bright-purple colour of the labellum has been perpetuated.

Læliocattleya Queen Mary was named in honour of Her Majesty's visit to Westonbirt. This glorious hybrid has few equals, for in regard to size and colour it is far ahead of almost all its near relations. Several examples were exhibited by Lieut.-Col. Sir George Holford, K.C.V.O., and the fact that two varieties received First-class Certificates and another an Award of Merit speaks well for the fine exhibition points possessed by this plant. It is the result of crossing C. Peetersii (Hardyana × labiata) with Lc. Lustre, the latter derived from C. Lueddemanniana and Lc. callistoglossa. At the International Exhibition of 1912 a First-class Certificate was awarded to Lc. Lustre var. Lavingo, shown by Sir George Holford, and illustrated in the *Orchid Review*, 1912, p. 240.

Among the many attractions from the collection of H. T. Pitt, Esq., was Odontonia Stelpæ, obtained by crossing Miltonia vexillaria with Odontoglossum Harwoodii. The various combinations of Miltonia and Odontoglossums have resulted in widely different flowers, more especially as regards colour. Odontonias have been described as the large-lipped Odontoglossums, but further progress must be made before the sepals and petals can be described as broadly formed. An analysis of the parentage of Odontonia Stelpæ shows that it combines Miltonia with both Colombian and Mexican Odontoglossums. In Mr. Pitt's example, distinguished as variety maculata. the wide flower had somewhat narrow sepals and petals, a broadly developed labellum, while the whole flower was yellow, spotted with red-brown.

Messrs. Stuart Low & Co. included several interesting species amongst

their hybrids. One of the best was Stanhopea Wardii, with its wonderfully constructed labellum, an organ that well repays close study in all the species of the genus. Doubtless, the construction of the labellum plays a part in the fertilisation of the flower by insect agency. The genus Stanhopea has not been taken in hand by the hybridist to any extent, and perhaps this is fortunate for the lover of large flowering species, for so much history has been written on these interesting plants that it is well to leave them alone as examples of Nature's productions.

Cattleya Dowiana aurea was exhibited in fine form by J. J. Joicey, Esq., along with many other excellent plants. The distinct characters of this South American species caused it to stand out conspicuously, and except for its rather delicate constitution it compares favourably with many of the yellow-flowering hybrids. Brassocattleya Sofrano, with its flowers of saffron-yellow colour, was arranged close to it as a good example of one of its hybrids.

Among the numerous hybrids exhibited by Messrs. Cypher & Sons were several that always hold their own when well grown. Foremost in the autumn-flowering section is Cattleya Portia, a primary hybrid obtained by crossing labiata with Bowringiana. The erect spikes carried numerous flowers of medium size and richly coloured. Another in the same section is Cattleya Fabia (labiata × aurea), which differs from C. Portia in having larger flowers, but not so many on the spike. In this, and other hybrids of aurea, the yellow colour generally brightens up the purple considerably.

There was a time when white varieties of Cattleya labiata were extremely valuable and much sought after, in fact, more than one amateur specialised in them. Now, however, the numerous white-flowering hybrids, with more robust constitutions, have displaced the species. On that account the plant of C. labiata var. Mrs. E. Ashworth exhibited by Mr Harry Dixon came as a pleasant reminder of the past. It received a First-class Certificate in October, 1896, and is still regarded as one of the best of its kind.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Sir Woodman Burbidge	Bc. Cliftonii × C. Warscewiczii	Sanders.
Cattleya Queenie	Hesta × Dowiana aurea	McBean.
Cattleya Vesta	Snowdrop × Lady Veitch	Cowan.
Cypripedium Golden Wings ...	Mrs. F. Sander × Golden Morn	P. Smith.
Cypripedium J. T. Barker	Shogun × San-Actæus	Sir H. Leon, Bart.
Læliocattleya Pandora	C. Fabia × Lc. Marmion	Cowan.
Odontoglossum Zeta	Jasper × mirum	McBean.

CULTURAL NOTES.

PHALÆNOPSIS.—In the warmest house the Phalænopsis will be pushing up flower spikes, and water must be given with extreme care. Plants that have had their spikes removed, such as P. Aphrodite and P. amabilis, will require but little moisture; merely a slight wetting of the surface compost and roots about the basket with a syringe will be amply sufficient. The freedom with which these plants flower, and the length of time the flowers last, is often the cause of failure to cultivate them satisfactorily for any great length of time; it is therefore advisable to remove the flower scapes as soon as developed, unless, of course, the plants are in a vigorous condition. The advantage of this will be an increase of vigour the following season.—*J. Mackay, December*, 1902.

STENOGLOTTIS LONGIFOLIA.—Although the individual flowers are small, fine spikes of this Cool-house Orchid are very decorative, and as they flower from the end of October till well on into the new year they are very helpful in making the Cool-house attractive. They are of very easy culture provided they are grown in a very buoyant house. Ours are given a position among the Cymbidiums. After the flowering season is over they generally lose many of their leaves, but this is no detriment, for it allows the young growths more light and air. When they are dying off do not give them quite so much water, but they should not be allowed to become really dry. As soon as the young growths are well started they should be potted, and the best results are attained when each growth is potted separately. A compost of two parts good loam to one part leaf soil will be found very suitable, adding plenty of sand and small crocks to keep it porous. Use ordinary pots and afford a fair drainage. After potting, water carefully till they are well away, and then they will be benefited by copious supplies.—*W. P. Bound, December*, 1907.

LÆLIA ANCEPS.—This species and its numerous varieties will now be at their best, and how useful they are, none know but those who grow them well. Small weakly plants are generally disappointing, but well-grown specimens, having pseudo-bulbs of the maximum size and well matured, produce flower spikes freely, which in their turn give flowers of the finest substance and brilliancy in colour. It is really the easiest Orchid to grow that I know of if given the right treatment, ranking not even second to Cypripedium insigne, or to Cœlogne cristata. Like the two latter it succeeds best when grown hardily. Insufficient air and light, and two much care and coddling during the summer months, generally keep these plants weak and feeble, and unable to give a good account of themselves when they ought to flower. These remarks apply also to some of the Dendrobiums and Cœlogynes.—*H. A. Burberry, December*, 1898.

ZYGOPETALUM.—There are few, if any, Christmas blooming species more useful and beautiful than the very old and well-known *Zygopetalum intermedium*, and none more certain to bloom. It also lasts a very long time in perfection, either on or off the plant. It likes intermediate temperature, and under favourable circumstances will grow rampant enough, but if by any means it has got out of health, it is often a difficult task to pull it round again, and rarely can it be done except by thoroughly overhauling it; taking it out of its pot, shaking off all old material, and re-potting again in very small pots, thus giving it a fresh start in life. This is generally the best and the quickest plan to adopt. *Z.* crinitum and *Z.* Makayi are very similar to this species, requiring the same treatment, and also bloom in winter. *Z.* Gautieri is a very handsome species, flowering at the same period, but different in habit from the foregoing. It is best grown on a tree fern stem, but failing that, a teakwood raft having a little moss and peat about it, is a good substitute. It should be suspended in the Intermediate house, and well supplied with moisture during the summer months.—*H. A. Burberry, December*, 1899.

CYPRIPEDIUMS.—A great many Cypripediums, species and hybrids, almost too numerous to mention, are invaluable for winter blooming, and form a most imposing array and an agreeable variation of form and colour in the houses just now. When Cypripediums are arranged with other more brilliant and showy Orchids they are placed at a great disadvantage, and the best way to fully appreciate the varied forms and colours of this particular class at this season is to place them together, with no other species to intrude. They then certainly give a very pretty and attractive display, and should be largely grown, and no doubt are in localities specially troubled with injurious fogs, for they are much less delicate than the majority of Orchid flowers, and rarely suffer much.—*J. Mackay, December*, 1905.

POTTING.—In potting the plants care should be taken not to break the roots. These should be spread out gradually, working in lumpy pieces of peat and loam between them. Do not in any case just fill up the pot with compost and then ram all the roots to the bottom. Careless potting is the cause of half the troubles of Orchid growing, and a well potted plant will never look back. When a plant looks sickly the fault can generally be found in the potting. We find that Cypripediums are better potted like ordinary plants, that is about half an inch below the rim of the pot, and not mounded up. We also find that, unlike many Orchids, they require plenty of pot room, and much better flowers are obtained from plants with plenty of material to feed on than pot-bound plants, and thrip will not be nearly so likely to make its appearance on strong healthy leaves as on those that are stunted. For potting the C. Fairrieanum section we use a mixture

of quite three parts of good yellow loam, one part lumpy peat and leaves, and plenty of crushed crocks. The compost must be kept open. Shake all dust out through a quarter inch sieve, and if the material is dry, damp it, so that it will just bind when potting. As loam varies so much in quality, it will be found to be most economical to obtain the best fibrous quality. It is not necessary to buy it specially prepared. A good potting loam, we find, suits quite well, for the fine material that is sifted out can be used for other potting.—*W. H. Morgan, December*, 1908.

ARRANGEMENT OF PLANTS.—It is mostly necessary at this season to re-arrange the plants to some extent in most of the houses, so that each plant may have the position deemed most suitable for the winter months. The best position for the various species often takes a good long time to find out, but when once done the advantages are soon apparent. In the Cattleya house, for instance, all those that are growing, more or less, should be given the warmest and moistest part, whilst those that are quite dormant should be kept by themselves. The same in the Intermediate house. The Cypripediums and such-like that are growing should be arranged together, and so on through the collection. Take care not to place the Miltonia vexillarias in too moist a part, rather preferring a dry position. Then again, if such kinds as Dendrobium Jamesianum, D. infundibulum, Oncidium cheirophorum, Nanodes Medusæ, Masdevallia tovarensis, M. Shuttleworthii, M. Chimæra, &c., have been summering in the coolest house, as is sometimes done, they will now require to be removed back to the intermediate house. The Anguloas are better if kept at the driest end of the cool house, and henceforth kept pretty dry at the root. It is better also to find a rather dry position for Epidendrum vitellinum, for if the moisture hangs about them much during winter it causes an unnecessary loss of foliage.—*J. Mackay, November*, 1905.

ODONTOGLOSSUMS AND MASDEVALLIAS.—Odontoglossum grande, having done flowering and finished up its bulbs, should have less water given at the root, and be gradually brought to a state of rest. The same remark will apply to O. citrosmum, which in some instances may be already showing new breaks, from which issue the flower spikes. To give these much water between this time and the appearance of the spike will probably result in their producing none. O. Uro-Skinneri is now growing and rooting freely, and should in consequence be kept moderately moist, and may even now be re-potted or surfaced if in a condition to warrant such a proceeding. It should be grown at the warmest end of the cool house, the conditions of which seem to fulfil its requirements. O. pulchellum, now in bloom, is one that does not like a saturated base for long at a time, and hence, when shifted into another pot, should only have a very small quantity of potting material supplied to it. Masdevallias generally should

be kept rather dry at the root all through the winter months, and kept a little warmer than the Odontoglossums. M. tovarensis is now in bloom, its snow-white flowers being very acceptable at this dull season. M. Wageneriana, muscosa, simula, and several other small-leaved kinds, with Pleurothallis macroblepharis and Barberiana, do better in the cooler atmosphere of the Odontoglossum house. Other Pleurothallis grow along with the Masdevallias, and in like manner should be kept rather dry. P. Rœzlii requires to be grown in the intermediate house, and having now finished growth, should be given only sufficient water to keep it in firm condition.—*J. Mackay, December*, 1903.

ROYAL HORTICULTURAL SOCIETY.

November 4th, 1924.

MEMBERS of the Orchid Committee present:—C. J. Lucas, Esq. (in the chair), Messrs. Gurney Wilson (Secretary), Jas. O'Brien, John Cowan, A. McBean, W. H. Hatcher, H. H. Smith, H. G. Alexander, S. W. Flory, A. Dye, H. T. Pitt, F. J. Hanbury, and J. Wilson Potter.

FIRST-CLASS CERTIFICATES.

Vuylstekeara Aspasia var. polysticta (Oda. Charlesworthii × M. Charlesworthii), from Messrs. Charlesworth & Co. This hybrid bore a spike of six flowers, in habit resembling M. vexillaria; sepals and petals crimson-red, the rose-tinted labellum having a crimson blotch at the base, and profusely spotted with rose-purple.

Læliocattleya Lustrissima, Westonbirt variety (C. Warscewiczii × Lc. Lustre), from Lieut.-Col. Sir George Holford, K.C.V.O., Tetbury, Glos. A grand result in which the large flowers, each eight inches in width, had the segments well proportioned, of rosy-mauve colour, the large and roundly formed labellum of purple colour heavily tinged with crimson.

AWARDS OF MERIT.

Miltonia Beau Brummell var. Aureole (Venus × Bleuana var. Reine Elizabeth), from Messrs. Charlesworth & Co. A very pretty form, the spike carrying three flowers, blush-tinted, the petals tinged with rose-purple, the expansive labellum having a crimson mask at the base and with radiating line of similar colour.

Læliocattleya Hassallii var. Supreme (Lc. Britannia × C. Warscewiczii), from Messrs. J. & A. McBean. A beautiful result obtained by using white sepalled and petalled forms of both parents. The broadly developed segments of thick substance, pure-white, except for the bright Tyrian-purple colour on the labellum.

Cattleya Wembley (Peetersii × Alexandra), from Messrs. Flory & Black.

A richly coloured hybrid of large size, sepals and petals tinged with crimson, the labellum deep ruby-crimson, and with an orange throat.

GROUPS.

Messrs. Cowan & Co., were awarded a Silver-Banksian Medal for a very pretty exhibit containing in the centre a fine example of Miltonia Bleuana grandiflora,with a spike of nine flowers. Also Cattleya Dædalus, of rich colour, C. Aeneas, C. Lady Veitch, with pure-white flowers, and choice varieties of C. Hardyana. There were good forms of Læliocattleya luminosa aurea and Lc. Dodona, also Odontoglossum Rosina (eximium × Lady Pirrie), with blotched flowers, and a wide selection of choice Cypripediums. A novelty was shown in Cattleya Vesta (Snowdrop × Lady Veitch), a promising and elegant hybrid with pure-white flowers.

Messrs. Stuart Low & Co., received a Silver Banksian Medal for a group containing a finely grown plant of the rare Cattleya Dowiana Rosita, C. labiata glauca, with a bluish labellum, C. Moira alba with white sepals and petals, and Læliocattleya Profusion. Among the hybrids of Sophronitis grandiflora were Slc. Apache, of deep crimson, and Slc. Ancona. Excellent Cypripediums were in prominent positions, while other attractions were Odontioda Cooksoniæ, Oncidium bicallosum and On. Forbesii.

Messrs. J. & A. McBean exhibited Læliocattleya Linda var. Aureola, buff-yellow, with rose-tinted labellum; Lc. Persis, of terra-cotta colour, tinged with light crimson; Odontoglossum Belenus, with a spike of 14 spotted flowers; O. Pyramus, with a spike of 17 claret-purple flowers, and a selection of Cypripedium insigne, including the variety Sanderæ, insigne Royalty, entirely free from spotting, and the variety Monarch, in which some dark spotting is present on the dorsal sepal.

Messrs. Flory & Black staged Cypripedium Fantasia (Cyclops × Christopher), of fine proportions, the large-flowering Brassocattleya Alderman var. Perfecta, with a couple of rose-pink blooms, and Bc. Juliet, Langley variety, with white sepals and petals, the labellum blush-tinted.

Leonard Dixon, Esq., Pitlochrie, St. Albans, exhibited Cattleya Mrs. Gratrix var. My Queen (Lady Veitch × intertexta), a pleasing flower of pure-white character.

Miss Hilda M. Cooley, Epworth, Reigate, showed several water colour drawings of Orchids.

November 18th, 1924.

Members of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), Messrs Gurney Wilson (Secretary), Jas. O'Brien, H. T. Pitt, H. G. Alexander, J. Wilson Potter, John Cowan, A. McBean, S. W. Flory,

J. E. Shill, C. H. Curtis, H. H. Smith, T. Armstrong, C. J. Lucas and E. R. Ashton.

FIRST-CLASS CERTIFICATE.

Miltonia William Pitt var. atropurpurea (Isabel Sander × Bleuana var. Reine Elizabeth), from Messrs. Charlesworth & Co. This young seedling bore a spike of two large flowers of truly remarkable colour. Sepals and petals intense crimson-purple, with a whitish area on the extreme tips; labellum slightly less intense, the base having a white area with brownish ray-like markings, the outer margin being a narrow whitish line. Probably the finest form of the M. vexillaria section yet seen.

AWARDS OF MERIT.

Miltonioda Boadicea (Miltonioda Harwoodii × Miltonia vexillaria var. Lyoth), from Messrs. Charlesworth & Co. Although of comparatively narrow formation as regards the segments, the colour is intense crimson in the sepals and petals, the labellum a little lighter.

Odontonia Regalis (M. vexillaria var. Queen Alexandra × O. Aquitania), from Messrs. Charlesworth & Co. A widely developed flower, of which three were borne on the spike, segments white, with rose-flushed areas, and slightly marked with blackish spots.

OTHER EXHIBITS.

Messrs. Cowan & Co., were awarded a Bronze Banksian Medal for a neatly arranged group, in the centre of which was a fine example of Cypripedium Leeanum var. J. Gurney Fowler, with its broadly developed dorsal sepal; also C. Leeanum var. Gratrixiæ, a pretty form of C. Elatior, the large flowering C. Dreadnought, a pleasing variety of C. Antinous, with light primrose-tinted flowers, and C. Pallas Athene, with well displayed segments. Among the Cattleyas were excellent varieties of Aeneas, of rich apricot-yellow colour, and the petals prettily crisped. Læliocattleya Nanon had the petals flushed with rose, and Brassocattleya Nestor was represented by two strong plants, each bearing large flowers of bright mauve colour. Zygopetalum Mackayi made an attractive contrast with its erect spike of blue-tinted flowers.

Messrs. Stuart Low & Co., received a Bronze Banksian Medal for an exhibit comprising well-flowered examples of Læliocattleya luminosa aurea, Lc. Linda, in several varieties, and a selection of Cattleyas, including Bellona lemoniana, of lemon-yellow colour, C. Sylvia, and several of the best forms of C. labiata, most of them with white sepals and petals. Odontoglossums and Odontiodas were also staged in variety.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt, Tetbury, exhibited Cypripedium Imperator, Westonbirt var. (Alcibiades × Pryamus), with the roundly formed dorsal sepal rose tinted and evenly dotted with purple-brown; also Cyp. Madame Albert Fevrier var. pulcherrimum (Germaine

Opoix × insigne), the dorsal sepal greenish, with an upper white border, and densely spotted with blackish-purple; petals and labellum tinged mahogany colour.

Messrs. Flory & Black staged Brassocattleya C. Fabia × Bc. Massangeana), a promising novelty of rose-pink, also Bc. Zephyr, with a couple of large flowers tinged with pink; and Læliocattleya Cherub, of excellent formation and colour.

Messrs. Charlesworth & Co. staged Odontoglossum Reve d'Or (Boadicea aureum × harvengtense aureum), a young seedling, with the flowers of yellow colour, blotched with a deeper tint.

THE ORCHID CLUB.

AT the meeting of The Orchid Club held on November 14th, there was a fine assemblage of well-grown Orchids; Odontoglossums, Cypripediums and interesting species being chiefly in evidence. The increasing popularity of the meetings was indicated by the larger number of visitors present.

PREMIER DIPLOMAS.

Odontoglossum Aureatum (parentage uncertain, possibly a form of mirum), from Dr. Craven Moore. The small plant carried a spike of ten flowers, each three inches in width, and in shape like that of a good eximium. Sepals marked with chrome-yellow blotches slightly broken and margined with white; petals have the inner two-thirds marked with solid blotches of cadmium-yellow; labellum flat, marked with a chrome-yellow blotch margined with white.

Cypripedium Memoria F. M. Ogilvie var. The Queen, from Dr. Craven Moore. One of the finest varieties of this well-known hybrid, raised by Mr. G. F. Moore. The dorsal sepal is flushed with bright crimson.

DIPLOMAS OF MERIT.

Cypripedium Monialis var. Hilda Sharp, from Dr. Craven Moore. A beautiful hybrid in the Niobe section. Flower well set and proportioned, dorsal sepal three inches transdiameter, the lower two-thirds flushed with bright crimson and with a deeper median stripe, the margin being clear white; petals and labellum of crimson-mahogany, margined with yellow.

GROUPS.

B. J. Beckton, Esq. (gr. Mr. W. A. Stewart), exhibited a large group of Cypripediums, Calanthes and interesting species. Among the latter were the rare Angræcum montanum, Odontoglossum madrense, Bulbophyllum lemniscatum, and a fine plant of B. hirtum. The richly-coloured Calanthe Angela and the large pure-white C. Cooksoniæ were also shown.

A. T. Cussons, Esq. (gr. Mr. F. Cookson), was responsible for an attractive exhibit of some fifty plants, including Cymbidium Mastersii album, a beautiful variety of C. Butterfly, the richly-coloured Cypripedium Pyralex, as well as an interesting collection of all known varieties of Cypripedium Niobe.

Mrs. Fred. Hardy staged a small collection of choice Odontoglossums and Odontiodas, all carrying full spikes, and in an excellent state of cultivation.

Dr. Craven Moore (gr. Mr. C. Branch) exhibited a selection of choice Cypripediums, including Bianca, Westonbirt variety, Gwen Hannen, Chardwar variety, and Nirvana.

F. T. Paul, Esq., staged Cypripedium Greyi var. claytonense and C. Frenchay.

John Jackson, Esq., showed a promising seedling Cypripedium and C. Caractacus.

MANCHESTER ORCHID SOCIETY.

October 3rd, 1924.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. Cypher, J. Evans, Capt. W. Horridge, J. Howes, E. W. Thompson, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum Enchantress. Of perfect shape, sepals and petals broadly developed, and with a chestnut blotch on the sepals and lip. From S. Gratrix, Esq.

Læliocattleya Hassallii alba. A fine flower having white sepals and petals and a richly coloured labellum. From P. Smith, Esq.

AWARDS OF MERIT.

Cattleya Iris, Haddon Belle; Cypripedium Golden Wings (Mrs. F. Sander × Golden Morn). From P. Smith, Esq.

Odontoglossum Krameri album. From Messrs. A. J. Keeling and Sons.

GROUPS.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Large Silver Medal, a special Cultural Award being recommended to the gardener.

Messrs. Cypher & Sons received a Large Silver Medal for an interesting group.

In the report of the meeting held September 19th omission was made of Odontoglossum King Henry VIII., which was exhibited by Mrs. Gratrix, and awarded a Large Silver Medal.

October 17th, 1924.

Members of the Committee present: R. Ashworth, Esq. (in the chair), Messrs. A. Burns, A. Coningsby, J. Cypher, G. Giles, E. W. Thompson, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cypripedium Joseph Thrower (Germaine Opoix × Leeanum Clinkaberryanum). A very fine flower with a large dorsal sepal over three inches across, and a white margin. From P. Smith, Esq.

Odontoglossum grande, Hey House variety. An unusually fine form of this well-known autumn flowering species. From J. McCartney, Esq.

AWARDS OF MERIT.

Cattleya Mendelissima var. Blushing Bride (Lueddemanniana Stanleyi × Mendelii alba). From S. Gratrix, Esq.

Cattleya Enid alba var. The Bride. From P. Smith, Esq.

GROUPS

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Gold Medal for a remarkable exhibit.

A. Hanmer, Esq., Buxton (gr. Mr. G. Giles), was awarded a Large Silver Medal for a miscellaneous group.

Messrs. Cypher & Sons, Cheltenham, were awarded a Large Silver Medal for a group of Orchids.

COLWYN BAY AUTUMN FLOWER SHOW.—The Colwyn Bay Horticultural Society's Autumn Show proved a successful event, and much interest was taken in the splendid exhibit of Orchids arranged by Mr. John Evans. His group contained fifteen specimens of Cypripedium insigne Sanderæ, still regarded as one of the best of its kind for autumn decorative work; Cyp. Goliath, of unusually fine form; Læliocattleya Schrœderæ var. Prince of Wales, and another variety with seven flowers on the spike; Lc. Hassallii var. Evansiæ, with pure-white sepals and petals, and Odontioda Duchess of York, of pleasing coloration. At the opening ceremony, Mr. F. G. Isherwood, J.P., said that the Society was deeply indebted to Mr. J. Evans for his fine exhibition of Orchids, an exhibition which people in other towns would have been pleased to pay five shillings to see.

ONCIDIUMS.—Two warm-growing Oncidiums, Kramerianum and Papilio, are highly appreciated when in bloom, their butterfly-like flowers being very attractive and interesting. These have been in flower for some time, and will continue to produce fresh flowers from each stem for a considerable period longer. These beautiful Oncidiums prefer a light position, and should be suspended close to the roof glass.

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